

# The Mining And Metallurgical Journal

VOL. XIX. No. 8

LOS ANGELES, CAL.,

July 15, 1898,

SAN FRANCISCO, CAL.

Price 15 Cents

## Jessop's STEEL

The Best  
.....FOR

Mining Drills,  
Tools, Etc.

I. WILLARD BEAM,

29 Main Street  
SAN FRANCISCO, CAL.

THE EDWARD P. ALLIS COMPANY

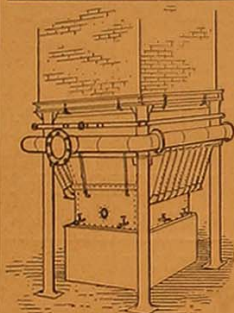
MANUFACTURERS OF

## Mining, Milling and Smelting Machinery

Crushers, Concentrators, Pumps, Compressors, Hoists, Boilers,  
Reliance Crushing Rolls, Reynolds Corliss Engines, &c.

Send for Catalogue.

Milwaukee, Wis.



## Smelting Machinery!

WE COVER THIS LINE COMPLETELY

Plants Designed by Experts,  
Every Part from Special Designs

HAVE YOU SEEN OUR STEAM STAMP?

The Gates Ore Breaker is known the World Over  
We Publish 15 Catalogues

Gates Iron Works, Dept 2 650 Elston Ave.  
CHICAGO

THE ROESSLER & HASSLACHER Chemical Co.

100 William St., New York

## CYANIDE

Peroxide of Sodium

Hyposulphite of Soda

Chloride of Lime

Sulphide of Iron



Trade Mark

And Other Chemicals for Mining Purposes.

## Joseph Dixon Crucible Co.

MINERS, IMPORTERS AND MANUFACTURERS

GRAPHITE & PLUMBAGO

JERSEY CITY, N. J.

RETORTS, CRUCIBLES, GRAPHITE LUBRICANTS, BELT DRESSING,  
GRAPHITE PAINTS, LEAD PENCILS, AND GRAPHITE  
PRODUCTS OF ALL KINDS.

Send for Production Catalogue.

Graphite Makes the Best Lubricant  
and Best Paint.

## ADAMANTINE SHOES & DIES

AND

CHROME CAST STEEL

Cams, Tappets, Bosses, Roll  
Shells and Crusher Plates.

These castings are extensively used in all the Mining  
States and Territories of North and South America. Guar-  
anteed to prove better and cheaper than any others. Orders  
solicited subject to above conditions. When ordering send  
sketch with exact dimensions. Send for Illustrated Circular.

CHROME STEEL WORKS,

Kent Ave. & Keap St., - BROOKLYN, N. Y.



Stamp Shoes

Stamp Dies



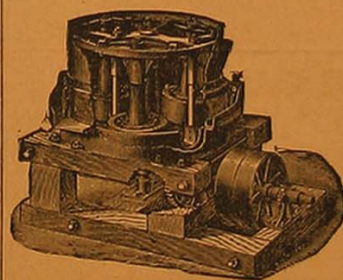
Stamp Cam

## PARKE & LACY COMPANY

21 and 23 FREMONT STREET, SAN FRANCISCO, CAL.

LICENSEE FOR THE MANUFACTURE AND SALE OF

## The Huntington Centrifugal Roller Quartz Mill



THE HUNTINGTON MILL is so well and favorably known among mining men throughout the world that any description of it would seem superfluous. They are in use in the United States, Canada, Mexico, Central and South America, Australia, China, Japan, and South Africa. In fact, wherever mines exist, and have given the best satisfaction of all quartz crushing mills.

The construction of this mill has lately been much improved and we claim it to be the

CHEAPEST, MOST EFFICIENT, SIMPLEST, AND MOST DURABLE MILL UPON THE MARKET.

← CATALOGUE UPON APPLICATION →

## The Pelton Water Wheel

Affords the Most Economical and Reliable Power for Mining,  
Electric and all other purposes.

9000 WHEELS NOW RUNNING

PELTON WATER WHEEL CO., 121 Main St., San Francisco, Cal.

## Refractory Ores

Successfully treated by the  
PORTER ELECTRICAL PROCESS

Address  
505 BULLARD BLOCK.

The Porter Gold and Silver  
Extraction Company

LOS ANGELES, CAL.

## Mexican, American and Foreign Patents, TRADEMARKS, ETC.

Reports on Mining and Other Properties.  
Proprietors of Weekly Anglo-American, a first-class Advertising Medium.  
Established 8 Years.

C. H. M. y Agramonte,

P. O. Box 388. Cable Address, "Agra"

CITY OF MEXICO, MEXICO

OTTO HECKELMANN

FERDINAND McCANN

## ASSAYERS AND CHEMISTS

Heckelmann & McCann + + Bullion Dealers

Cash paid for all kinds of Gold, Silver and Ores. All assays  
and Chemical Analysis at Mexican Silver Rates, 50  
per cent. Less than American Price.

PUENTE DE SAN FRANCISCO, No. 6

CITY OF MEXICO

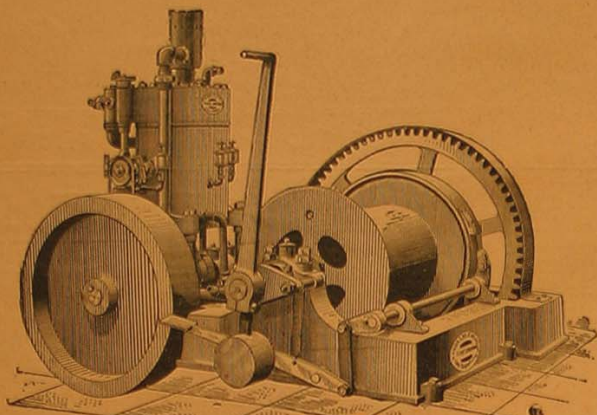
## California Vigorit Powder Co.

Manufacturers of

Dynamite High Explosives and "Vigorit Low" Blasting Powder

OFFICE: 208 California Street,  
San Francisco, Cal.WORKS: Point Isabel,  
Contra Costa Co., Cal.

## "Union" Hoist



Union Gas or Oil Engine and Hoist Combined, on strong, iron base.

**No Fire No Steam No Boiler No Danger**  
 TEN YEARS' EXPERIENCE. TWO THOUSAND ENGINES IN USE.

Started instantly. Compact, strong, simple, efficient, economical. Perfectly governed, so that oil is used only in proportion to the work done. No expense when idle.

 Particularly Adapted to Mining in Localities Where  
 Fuel and Water are Expensive.

 Built in the following sizes:—1 H.P., 4 H.P., 6 H.P., 8 H.P., 10 H.P., 15 H.P.,  
 20 H.P., 30 H.P., 40 H.P.

Send for Catalogue and state what H. P. required.

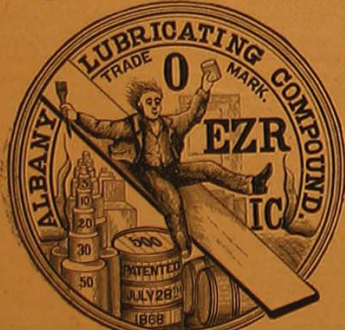
**Union Gas Engine Co.,**

301 Howard Street, San Francisco, Cal.

## YUKON BOATS AND SLEDS

 Stern Wheel Boats, 25 ft. to 200 ft. in length. Light draught.  
 Shipped—knocked down—and set up ready to run. Send for circulars and prices.

SAN FRANCISCO LAUNCH CO. Cor. of North Point and Stockton Sts. San Francisco, Cal.

 The only Genuine ALBANY GREASE  
 has this TRADE MARK on every package.  
 Look out for Yellow Label.

 MANUFACTURERS OF  
 Albany Dynamo & Albany Cylinder Oils  
 If you are not using these Oils give them a trial  
 at once, and we know the result. You will want  
 no other.

**FRANCIS SMITH & CO.,**

— MANUFACTURERS OF —



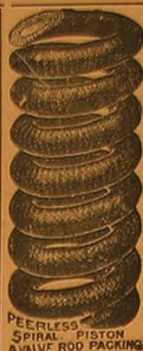
MINING PIPE ALL SIZES

Hydraulic, Irrigation and Power Plants, Well Pipe, Etc., all Sizes.

 Iron cut, punched and formed, or making pipe on ground where required. All kinds of Tools  
 supplied for making Pipe. Estimates given when required. Are prepared for coating all sizes of  
 Pipes with Asphaltum.

130 Beale Street

San Francisco, Cal.



## Peerless Spiral Piston and Valve Rod Packing

 Expressly for High Speed Engines. Will Hold 400  
 lbs. Steam. The best packing for  
 MINING USES

20 YEARS OLD AND NO EQUAL

MANUFACTURED EXCLUSIVELY BY

**Peerless Rubber Mfg Co.** 16 Warren St.  
 New York City

16-24 Woodward Avenue, Detroit, Mich.

202-210 S. Water Street, Chicago, Ill.

Dunham, Carrigan &amp; Hayden Co., San Francisco, Cal.

T. &amp; B.

## STEEL MINING PIPE

— FOR —

### HYDRAULIC, PLACER AND QUARTZ MINING

 Riveted up complete or Cut and Punched to be  
 Riveted at the mine.

 Well Pipe, Galvanized Air Pipe, Wrought and Cast Iron Pipe. Iron  
 Tanks of all kinds. Water Supply Material. General  
 Sheet Iron Works.

Correspondence Invited

Send for prices

**THOMSON & BOYLE CO.**

306-318 Requesena St.,

Los Angeles, Cal.

## WILLIAM H. EMANUEL,

REPRESENTING

 RAND DRILL COMPANY,  
 THE EDW. P. ALLIS CO.,

 Air Drills and Compressors  
 General Mining, Milling and Smelting  
 Machinery and Reynolds Corliss Engine  
 Wire Rope and Bleichert Tramways  
 General Service and Mining Pumps  
 ROBIN'S BELT CONVEYOR

DENVER

COLORADO

### RICHARD L. COLBURN,

 Stock and  
 Mining Broker

 Member of  
 Salt Lake Stock and  
 Mining Exchange
SALT LAKE CITY,  
UTAH.

### JUST PUBLISHED

SECOND EDITION, REVISED AND MUCH  
ENLARGED.

### Gas, Gasoline and Oil Engines

BY GARDNER D. HIBOOK, M. E.

 The only American book on the subject. 324  
 pages, 8vo, illustrated with 270 handsome engravings.  
 Price \$2.50. Full of general information  
 about the new and popular motive power, its  
 economy and ease of management. Also chapters  
 on Horseless Vehicles, Electric Lighting,  
 Marine Propulsion, etc.

Special circular and catalogue on request. Address

NORMAN W. HENLEY &amp; CO.,

132 Nassau Street,

New York

### TRIPP METALLIC PACKING

FOR  
PISTON RODSMining Trade  
Solicited

WM. B. MERRILL &amp; CO.,

SOLE MANUFACTURERS

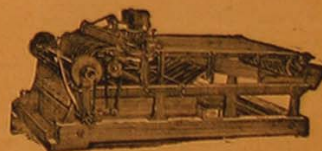
Office and Factory, 295 Congress Street  
BOSTON, MASSACHUSETTS

## PATENTS!

 TOWNSEND BROTHERS  
 SOLICITORS  
 OF PATENTS

 Patents on Inventions secured in all countries.  
 Copyrights, Trade Marks and Labels.
Office, 9, Downey Block.  
Telephone 347. Los Angeles, Cal.

### WOODBURY CONCENTRATOR



No. 141 First St., - San Francisco

### McDearmon & Co.

 Asbestos Boiler & Steam Pipe Coverings  
 Asbestos Cement for Boilers, drums, Heaters,  
 Etc. Special facilities for supplying  
 the mining trade.

 Pacific Coast Agent for H. W. John's Co's Asbestos  
 Sectional Coverings.  
 423 Sacramento Street, - San Francisco, Cal.

## MACHINERY

 STAMP MILLS, Marine and Stationary  
 ENGINES and BOILERS, Saw Mills and all  
 kinds of new and second hand machinery.

 Send for Catalogue  
 WASHINGTON MACHINERY DEPOT  
 TACOMA, WASHINGTON

## J. W. Paxson Co.

FOUNDRY

Facings, Supplies, Equipments

COMPLETE OUTFITS

Philadelphia, Pennsylvania

## ALPHABETICAL INDEX TO ADVERTISERS

A		E		I		S	
Abbot, W. O.	23	Rimer & Amend	4	Lambert Hoisting Engine Co.	32	Santa Fe Route	22
Aetna Powder Co.	4	Ellis, H. R.	27	Leffel & Co., James	27	San Francisco Launch Co.	2
Agramonte, C. H. M. Y.	29	Emanuel, Wm. H.	2	Lehigh University	17	S. F. Pioneer Screen Works	23
Albuquerque Foundry & Machine Works	24	Eynon-Evans Manufacturing Co.	26	Lexow, Theo.	21	Selby Smelting & Lead Co.	23
Allis Co., Edward P.	21			Lidgerwood Manufacturing Co.	5	Simonds & Wainwright	30
Altender & Sons, Theo.	21			Little Alaska Gold Washer	30	Silver City Reduction Works	27
American Diamond Rock Drill Co.	30			Louergan & Calkins	5	Smith, S. J.	6
American Zinc Lead Co.	19			Lord, Geo. W.	25	Smith & Irving	17
Aubury, L. E.	19			Luitwieler S. W.	25	Smith & Co., Francis	25
B		F		M		T	
Bailey, A. A.	24	Fauth & Co.	27	Machinery and Electrical Co.	29	Taylor & Co., John	27
Baker & Adamson Chemical Co.	18	Fay & Hagan Co., J. A.	28	Mathison & Co.	23	Taylor Iron and Steel Co.	5
Baker & Co.	3	Ferrari, Guido	4	McDearmon & Co.	2	Thomson & Boyle	2
Baker & Hamilton	22	Foot, Dr. A. H.	17	Merrill, William B. & Co.	2	Tomlinson, J. B.	5
Baker Iron Works	32	Fossil Meat Co.	30	Moller, E. C.	21	Townsend Bros.	2
Baird & Co., Henry Carey	21	Fowler, G. C.	30	Montgomery Machinery Co., J. H.	24	Trenhaue & Froelich	24
Barnes & Co., W. F. and John	21	Fulton Engine Works	32	Moore & Co. Chas C.	4	Trenton Iron Co., The	21
Beam, I. Willard	1	Fraser & Chalmers	18			Troemner, Henry	24
Beckley & Co., A. J.	17	Frese, Adolf	18			Truax Manufacturing Co.	5
Bell, Newton M.	21						
Bi Metallic Assay Office	23						
Bickford Drill Co.	23						
Blake Mfg Co., Geo. F.	24						
Borden, Gail	4						
Boothe & Co., C. B.	31						
Bradley-Ramsey Lumber Co.	32						
Bradley Pulverizer Co.	32						
Brandis & Son, F. E.	21						
Brown, M. E., Horace F.	22						
Buff & Berger	22						
Bullock Mfg Co., M. C.	5						
Burbridge, S. L.	30						
Burke, T. J.	30						
Burlingame, H. E.	3						
Burlingham, N. D., M. E.	24						
C		G		N		U	
Caldwell Bros.	21	Garratt & Co., W. T.	27	National Iron Works	5	Union Gas Engine Co.	2
Cal Bellows Mfg Co.	21	Gates Iron Works	21	National Pipe Bending Co.	26	Union Hardware & Metal Co.	22
California Perforating Screen Co.	25	Giant Powder Co., Con.	22	New Haven Mfg Co.	26		
California Wire Works	29	Glandine Co., James	23				
California Vigorite Powder Co.	2	Globe Iron Works	22				
Chapman Smelting Works Co.	24	Goodyear Rubber Mfg Co.	18				
Charleson Percy, W.	24	Graphite Lubricating Co.	19				
Chester Steel Castings Co.	22	Grainward Chas. F.	24				
Chicago & Aurora Smelting & Refining Co.	28	Gutta Percha Rubber and Mfg Co.	23				
Chicago School of Assaying	24						
Chrome Steel Works	1						
Coates, H. P. G.	2						
Colburn, Richard L.	2						
Colorado Iron Works	23						
Cook's Sons, Adam	2						
Colo. and Cal. Mineral Development Co.	4						
Compania Industrial Mexicana	26						
Conway & Co., P. J.	28						
Consolidated Pipe Co.	4						
Con. Kansas City Smelting & Refining Co.	30						
D		H		O		V	
Dame, W. E.	18	Hamlin & Morrison	27	Ohlandt & Co., N.	29	Van Der Naillen, A.	5
Daniel, C. A.	28	Hassell Iron Wks Co.	22	Oregon Railroad and Navigation Co.	29	Van Osdel, E. B., A. M.	18
Davis Iron Works Co., F. M.	5	Harrington & King Perforating Co.	6	Oriental Gas Engine Co.	27	Van Nostrand Co., D.	4
Degen, L. P.	5	Harper & Reynolds Co.	24				
Denunston, E. S.	10	Heckelmann and McCann	1				
Denver Fire Clay Co.	27	Hercules Gas Engine	17				
Denver Public Sampling Wks.	21	Hendy Machine Works, Joshua	25				
Dee & Co., Thos. J.	30	Hendrie & Bolthoff Manufacturing Co.	28				
DeSolla Deussing Co.	30	Henley & Co., Norman C.	2				
Dickman & Mackenzie	25	Henshaw, Bulkley & Co.	5, 22, 23, 24, 25, 26, 28				
Dixon Crucible Co., Jos.	3	Hersey, Clarence	5				
Drake, Dr. W. F.	30	Heer, Peter	5				
Ducommun, C.	23	Hoff Asbestos Mfg Co.	23				
		Hopping, Roy	23				
		Hoskins & Co., Wm.	17				
		Howe, Frank H.	31				
		Hubbard, W. E. & Co.	21				
		Hubbell & Longyear	21				
		Hunt, Fred. F.	6				
I		J		P		W	
		Imperial Chemical Co.	22	Pacific Mining Machinery Co.	21	Wade & Wade	18
		Incorporated Mines Paying Dividends	22	Pacific Optical Company	18	Warren, A. A.	18
		Ingersoll, Sergeant Drill Co.	19	Paraffine Paint Co.	25	Washington Machinery Depot	2
				Parke & Lacy Co.	27	Watson, R. N.	32
				Paxson & Co., J. W.	2	Weber Gas and Gasoline Engine Co.	3
				Pellon Water Wheel Co.	2	Weber & Co., F.	29
				Penn Smelting and Refining Co.	25	Weigle Pipe Works	27
				Perkins Pump and Engine Co.	30	Western Chemical Co.	18
				Peerless Rubber Manufacturing Co.	2	Western Forge & Rolling Mills	26
				Philadelphia Book Co.	28	Whitney Co.	28
				Porter Gold & Silver Extraction Co.	1	White Rogers & Co.	27
				Price, J. Son, Thos.	24	Wigmore & Sons Co., J.	3
				Pueblo Foundry and Machine Shop	29	Wilcox & Rose Co.	30
				Pueblo Smelting & Refining Co.	31	Williams, F. A. A.	24
				Pulsometer Steam Pump Co.	21	Wilson, J. Howard	4
						Wimmer Geo	29
						Wonder Pump Manufacturing Co.	28
						Woodbury Concentrator Co.	2
						Woodward, E. C.	25
K		L		Q		Y	
		Jackson Drill and Manufacturing Co., The	26	Queen & Co.	24	Yawger, I. C.	21
		Jeffrey Manufacturing Co.	24				
		Jeffrey F. M.	3				
		Jessops Steel Co.	1				
		Johannesburg Sampling Works	18				
		Judson, A. F.	18				
L		M		R			
		Keuffel & Esser Company	6	Reed, John T.	30		
		Keystone Lubricating Co.	6	Read, Edward B.	25		
		Kolbusch, Sr. Herman	25	Ready Rock Asphalt Roofing Co.	24		
		Krogh Manufacturing Co.	19	Ricketts & Banks	5		
				Ridson Iron Works	31		
				Roessler & Hasselacher Chemical Co.	30		
				Robins' Conveying Belt Co.	30		
				Rogers & Baldwin	24		
				Russell & Co.	18		
				Russell, W. A.	30		

## Crude Platinum Purchased.

To Identify Crude Platinum when found, send 75c for Sample in glass, packed in a strong box. We purchase or refine anything containing Platinum.

BAKER &amp; COMPANY,

NEW YORK OFFICE: 121 Liberty Street.

NEWARK, NEW JERSEY

## John Wigmore and Sons Co.,

GENERAL MINING SUPPLIES

HEAVY HARDWARE IRON AND STEEL

AGENTS FOR

John A. Roebbling's Sons Company's

WIRE CABLES

Giant Powder

117 to 123 S. Los Angeles St.,

LOS ANGELES, CALIFORNIA

**DICKMAN & MACKENZIE**  
MINING ENGINEERS,  
ASSAYERS AND CHEMISTS

1224 Rookery Bldg, Chicago Box 77, El Paso, Texas

Orders by mail or express promptly attended to. Mining properties examined.

**F. M. JEFFERY,**  
MINING LAWYER

212 Wilcox Bldg., Los Angeles, Cal.

Five years in Cripple Creek, Colo.

## WEBER

Gasoline Hoisting Engine....

Money Savers

Costs to run ONE CENT per Horse Power Per Hour. No Coal or Wood and Very Little WATER REQUIRED

We also build Single and Double Drum Hoisting Engines, both Geared or Friction, and furnish Wire Rope, Ore Buckets, Cars, Shives, etc., making complete outfits. "Weber" Hoisters and Engines use Gasoline, Naptha, Distillate, etc., for fuel. They can be used Underground or on the dump. Altitude makes no difference in the operating of the "Weber."

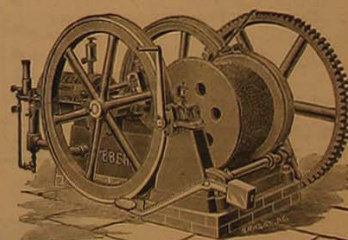
Safe! Stiff! Strong!

Every Engine Sold on an Absolute Guarantee. In use for all purposes. Used by such concerns as Consolidated K. C. Smelting and Refining Co., Philadelphia Smelting Co., Guggenheim, etc. For prices and particulars write us, stating duty required, Horse Power, etc. Catalogues, "Stationery" and "Hoisting" on application to

Weber Gas and Gasoline Engine Co.

434 S. W. BOULEVARD,

KANSAS CITY, MISSOURI



This Cut represents our 10, 15, 20, 30, 40, 50, H. P. Geared Hoist

# CHAS. C. MOORE & CO.

ENGINEERS AND DEALERS IN

BABCOCK & WILCOX BOILERS, GREEN'S ECONOMIZERS,  
 MCINTOSH & SEYMOUR ENGINES, WHEELER CONDENSERS,  
 HAMILTON CORLISS ENGINES, BARNARD-WHEELER COOLING TOWERS,  
 N. Y. SAFETY AUTOMATIC ENGINES, HOPPE'S LIVE STEAM PURIFIERS,  
 GOUBERT FEED WATER HEATERS, EDMISTON FEED WATER FILTERS,  
 STRATTON STEAM SEPARATORS, BUNDY STEAM TRAPS,  
 SNOW STEAM PUMPS, SPENCER DAMPER REGULATORS,  
 QUMBY SCREW PUMPS, HYATT ROLLER BEARINGS.

Watch this Space for description of the above Machinery.

Send for Catalogue and Full Information.

19 First Street, San Francisco, Cal.

**GOODYEAR'S RUBBER GOODS**  
 — FOR —  
**Miners and Mining**  
 GATHERING RUBBER, Crack Proof Boots, White Rubber Coats, Oil Clothing  
**BELTING, PACKING AND HOSE**  
 573, 575, 579 Market Street,  
 SAN FRANCISCO, CAL.  
 73 and 75 First St.  
 PORTLAND, OREGON

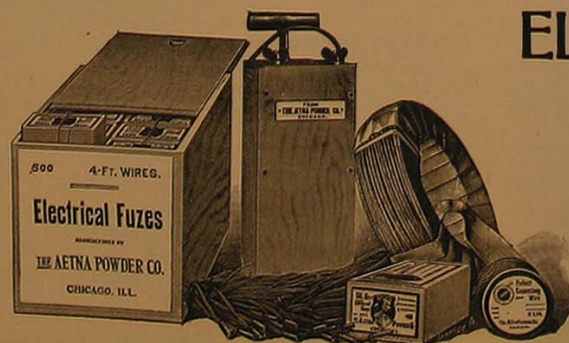
**Diamond - Pointed Core Drills**  
 AMERICAN  
 DIAMOND ROCK DRILL CO.  
 120 Liberty St., New York.  
 P. O. Box 1442.  
**COMPLETE MINERAL CATALOGUE**  
 186 pages with 40 engravings; contains table giving name, composition and form of all known minerals with other valuable lists and tables. The best book of the kind ever published, for students, prospectors, mining experts, chemists and others. Prices post paid, paper 25c, cloth 50c; call \$1.00. SPECIMENS PURCHASED OF Ores or fine crystallization. Correspondence invited. PRICE LIST FREE.  
 Dr. E. H. Foote, 1317 Arch St. Philadelphia, Pa.  
 Established 1876

**JENA** Trade Mark  
 Normal Glass  
**SCHOTT & GEN.**  
 JENA  
 BEST GLASS FOR Laboratory use  
 CHEMICALS AND CHEMICAL APPARATUS  
 ASSAY BALANCES  
 Finest Ever Made  
 Specialties:—Analytical Portable Balances, Porcelainware, Platinum goods, Crucibles, Cupels, Scorifiers, Muffles, Furnaces, C. P. Acids, etc.  
 Everything Necessary for Assayers  
**Elmer & Amend,**  
 3d Ave. Cor of 18th St. New York

Advertise in The Journal  
**J. HOWARD WILSON**  
 Assayer and Chemist  
 A Specialty Made of Empire Work.  
 306 Santa Fe Ave., Pueblo, Colo.  
**FOURTH EDITION**  
 Large 8vo., cloth, 700 Pages and Numerous Plates, \$5.00  
**The METALLURGY OF GOLD**  
 A PRACTICAL TREATISE ON  
 The Metallurgical Treatment of Gold Bearing Ores.  
 Including the Processes of Concentration and Chlorination and Extraction of Cyanide and the Assaying, Melting and Refining of Gold.  
 By M. RESSLER, M. E.  
 Fourth Edition, Revised and Enlarged to 700 Pages. With 25 Additional Plates, and Working Drawings and Chapters on Recent Milling Operations in the Transvaal.  
**D. VAN NOSTRAND CO., Publishers**  
 23 Murray and 27 Warren Sts., New York  
 Copies sent by mail on receipt of Price

**CONSOLIDATED PIPE COMPANY,**  
 IRON AND STEEL WATER PIPE A SPECIALTY  
 873-889 STEPHENSON AVENUE, LOS ANGELES, CAL.  
**A. C. HARPER, Proprietor.**  
 Telephone Main 420 Post Office Box 867

**THE COLORADO and CALIFORNIA Mineral Developing Co.**  
 433-4-5 STIMSON BLOCK, LOS ANGELES, CAL.  
 Prospecting, Developing of Mines, Mine Operators, Locating, Buying and Selling of Mines a Specialty, Financial Agents for Eastern Capitalists.  
 GAIL BORDEN, President  
 GAY W. BROWN, Vice-President  
 J. K. HAWK, Secretary  
 CAPITAL STOCK, \$200,000  
 Correspondence Solicited



Send for our illustrated pamphlet

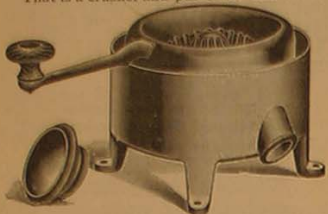
## ELECTRICAL FUZES

BLASTING MACHINES  
 LEADING WIRE  
 CONNECTING WIRE

**THE AETNA POWDER CO.**  
 188 MADISON STREET  
 CHICAGO - ILL.

**A NEW MORTAR**

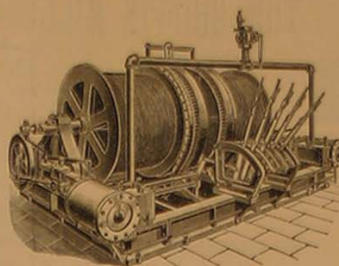
That is a crusher and pulverizer combined.



Weight 110 lbs.; Diameter 10 1/4 in.; Height 8 1/2 in.  
Fills a long-felt want. Send for descriptive  
circular. Crusher Pulverizer No. 1, \$25.00.  
J. E. Surman & Co., 74 Courtlandt St., New York

## Lidgerwood Hoisting Engines

Built to gauge on the Duplicate  
Part System. Quick Delivery Assured.



HENSHAW, BULKLEY & CO., Agents, San Francisco.

New York

## Mine Hoists, CABLEWAYS

Conveying Devices, for Mining, Quarrying,  
Logging, Dam Construction, &c.

Electric Hoists and Appliances

Lidgerwood Mfg. Co.

## J. A. FAY & EGAN CO.

CINCINNATI, OHIO

### Wood Working Machinery

— FOR —

Box Factories, Planing Mills, Sash, Door & Blind Factories  
Carriage, Wagon and Agricultural Shops.

HENSHAW, BULKLEY & CO., Agents, San Francisco, Cal

## THE NATIONAL IRON WORKS



Rivets, Boilers, Tanks, and Sheet Steel or Iron Work of every description.

MANUFACTURER OF THE

National Steel Ore Car

Repairing of All kinds Promptly Attended to.  
PORTLAND, OREGON

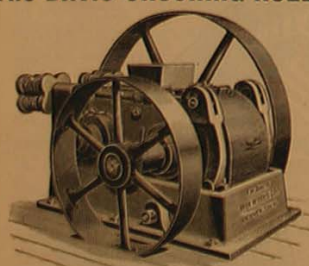
## The F. M. Davis Iron Works Co.

Office and Works 723 to 743

LARIMER STREET.

Corner 8th Street, DENVER, COL.

### The DAVIS CRUSHING ROLLS



### SIMPLE, DURABLE, EFFICIENT

These machines are built in 5 sizes  
27"x14". Belt Driven, \$950.00. Weight  
13,000 pounds.

SEND FOR CATALOGUES and DISCOUNTS

## OUR New Book

### ESSAYS UPON

Boiler Incrustation and Corrosion.  
Boiler Explosions, The History of  
Natural Water Contamination.

BY GEO. W. LORD, is now ready

We will send this interesting little book free of  
cost to

EVERY SUPERINTENDENT  
OR ENGINEER

Who will state his occupation, By whom em-  
ployed. Total Boiler capacity. What Scale pre-  
ventive he is using. The cost of the article. And  
how long the supply will last. Address

Geo. W. Lord, Philadelphia  
Pa.

## J. B. TOMLINSON, M. E.

Prescott, Arizona,

MINING PROPERTIES EXAMINED, AP-  
PROVED AND REPORTED UPON

AND  
Supervision taken of the development of pros-  
pects and the operation of mines.

## S. S. MACHINERY CO.

Buy, Sell and Trade in All Kinds of SECOND-HAND  
Mining and Wood Working Machinery.

CORRESPONDENCE SOLICITED.

OFFICE: 1529 Lawrence  
WORKS: 8th and Market

DENVER, COLORADO

TELEPHONE: Office, 120  
Works, 1334

## ORE TESTING

Complete mill for testing ores on practical scale by all processes to determine the best process  
adapted to treating any ore submitted. Processes in use investigated to overcome unnecessary  
losses, etc.

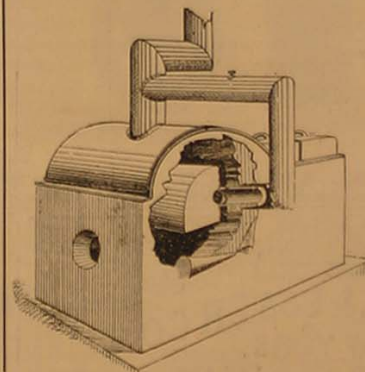
## RICKETTS & BANKS.

Metallurgists & Chemists

No. 104 JOHN STREET,

NEW YORK CITY

## LONERGAN & CALKINS' Combined Melting and Muffle Furnace,



This cut shows the Oxi-  
dizing Bonnet by which a con-  
tinuous flow of fresh air con-  
trolled by a damper is passed  
through the muffle.

## LONERGAN & CALKINS,

Gold and Silver Refiners,  
Assayers and Bullion Buyers.

127 West First Street,

LOS ANGELES, CAL.

## THE TRUAX PATENT IMPROVED

### AUTOMATIC ORE CARS

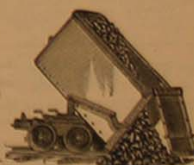
Manufactured by

CHAS. B. BOOTH & CO.

126-128

SOUTH LOS ANGELES ST.

LOS ANGELES, CAL.



Pat. Jan. 2, 1892, Pat. Aug. 27, 1895.

Send for our Catalogue and Prices

## Bullock's Diamond Prospecting Core Drills

These are the only Machines which will give absolutely accurate records of  
borings. Fifteen styles and sizes. Operated by hand, horse, steam, air or  
electricity.

### Monarch Rock Drills

Any style of mounting. Simple, compact, economical. Operated by air or steam

Hoisting and Haulage Machinery to fill any requirements.

## M. C. BULLOCK MFG. CO.,

1178 West Lake Street,

CHICAGO, ILLINOIS

### \* SCHOOL OF \*

Practical Mining, Civil, Mechanical,  
Electrical Engineering, Metallurgy.

Surveying, Architecture, Drawing and Assaying.  
933 MARKET ST. SAN FRANCISCO, CAL.

OPEN ALL YEAR  
A. VAN DER NAILLEN, President.

Assaying of Ores, \$25; Bullion and Chlorination  
Assay, \$45; Blowpipe Assay \$10. Full Course  
of Assaying, \$50. Established 1864.

Send for Circular.

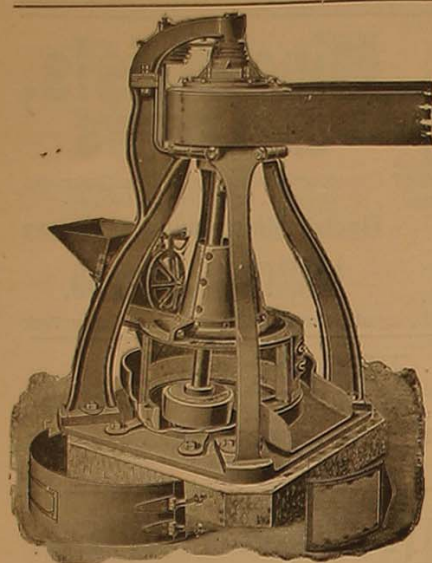
## PETER HEER,

232-234 E. Washington St., - CHICAGO

Manufacturers of Highest Class

Engineering and Mining Instruments

T-Squares, Triangles, Scales, Etc. Repairs care-  
fully and promptly executed. Drafting Sup-  
plies of all kinds. Catalogue on application.



## THE GRIFFIN MILL

The only Perfect Pulverizer Working both Wet or Dry Process

NO JOURNALS IN PULVERIZING CHAMBER.

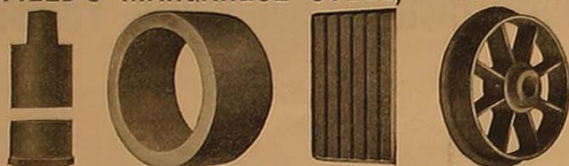
Delivers a finished product. Will pulverize 1 to 2 tons per hour on Portland Cement, Quartz or ores depending on hardness of material and firmness of product.

— Manufactured and Sold by —

Bradley Pulverizer Co.,

92 STATE STREET,  
Boston, Mass.

## HADFIELD'S MANGANESE STEEL, HARD, TOUGH.



Best Metal known for Stamp Shoes and Dies, Roll Shells, Crusher Plates and Side Liners. Toggles and Toggle Bearings, Gyroscopic Cones and Concaves or Liners, Mine Car Wheels, Coal Crushing Rolls, Etc., Etc.

TAYLOR IRON AND STEEL CO.,

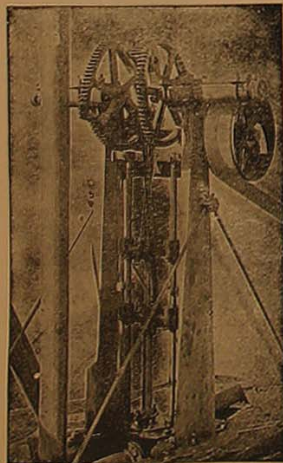
Sole Licensees in America under Hadfield System and Patents.

High Bridge, N. J., U. S. A.

**KEUFFEL & ESSER CO.**  
NEW YORK.  
127 FULTON AND 42 ANN STS.  
Branches: 111 Madison St., Chicago; 708 Locust Street, St. Louis, Missouri  
Drawing Materials and Surveying Instruments  
largest and best assorted stock in America. All requisites for field, mine, and draughting room. We have made a study of this line, and our goods are warranted to be as nearly perfect as it is possible to make them. Prices reasonable. Write for catalogue.

## Agent FULTON POWER PUMPS

With Capacities up to 30,000 gallons per hour.  
Made by A. T. Ames, of Galt, Cal.



Fred. F. Hunt, E. M.

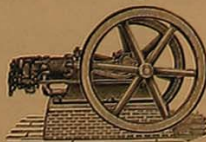
\* Chemist and Assayer

Weighing, Sampling and Assaying all Mineral Products  
Specialties: Lead, Bullion and Umpire Assays  
Samples by Mail or Express.  
77 Pine Street, New York City

## LAMBERT

Gas, Gasoline and  
Distillate Engines

TANKS, PIPE  
and WATER  
SUPPLY  
GOODS



Call on or Address,

S. J. SMITH,

230 East Fourth Street,

LOS ANGELES, CAL.

## Preach at 'Em!



If you want the Miners of North and South America to know you are on earth, you've got to "Preach at 'em."

The Mining and  
Metallurgical Journal

is the best medium to use—do all your preaching in it, and miners all over the world will listen to you.

OFFICES:

Stimson Block, Los Angeles and  
64 Merchants' Exchange,  
San Francisco, Cal.

## KEYSTONE LUBRICATING GREASE

The only grease adapted to all temperatures. It will not splash or drip like oil.

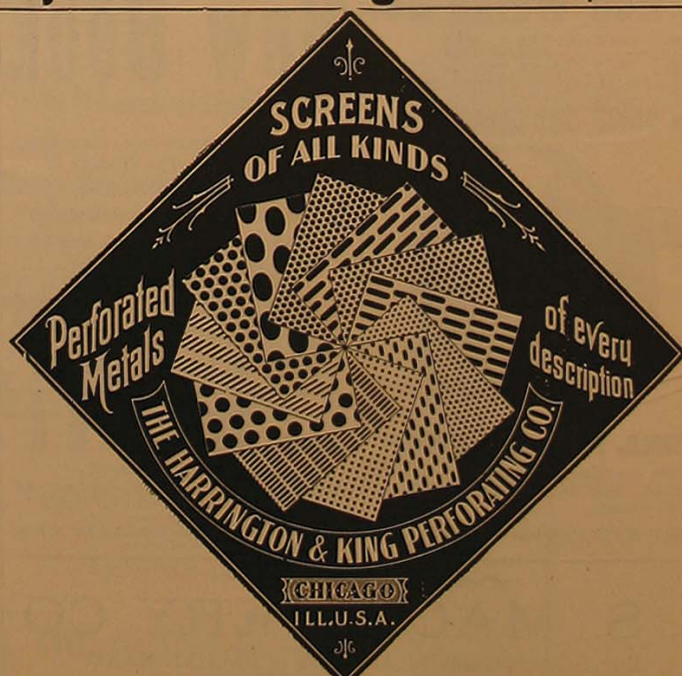
**LUBRICANT**  
TRADE MARK  
REGISTERED.

Our goods are not for sale by the Jobbing trade. If you want the genuine Keystone Grease it can only be obtained from us.

A full set of brass cups furnished FREE on first purchase

Especially adapted for Air Compressors and all kinds of Machinery in connection with Mines, Mills and Smelters. Send for trial sample and Cup Free of Charge.

**Keystone Lubricating Co.** 20th & Allegheny Ave.  
Philadelphia, Pa.



The Harrington & King Perforating Co.

127 N. Union St., Chicago Ill. Eastern Office, 284 Pearl St., New York.

ENTERED AT THE POST OFFICE AT LOS ANGELES, CALIFORNIA  
AS SECOND CLASS MAIL MATTER.

F. W. EDELSTEN, Editor.

JOHN STEWART, *Special Contributor*

ULRICH KNOCH, Publisher

OFFICES { Stimson Block, Los Angeles, Cal.  
/ 64-65 Merchants Exchange, San Francisco, Cal.

SUBSCRIPTION PRICE:

SUBSCRIPTION PRICE:	
For United States, Mexico and Canada.....	\$2.50 per annum
" " " " " " .....	1.25 six months
All other countries in the postal union.....	3.50 per annum
" " " " " " .....	1.75 six months

ISSUED SEMI-MONTHLY

ADVERTISING RATES FURNISHED ON APPLICATION.

In our last issue, reference was made to the delay and loss occasioned to inventors by the slow way in which the Patent Office examined applications for patents to new inventions. It will be interesting to inventors to learn that the Congressional bill, past 6th June last, for the revision an classification of letters patent. The operation of the bill will cause an expenditure of \$300,000; but, as this branch of the service is self-supporting, as the receipts are in excess of the expenses, the bill was necessary to get an increase of the staff of examiners and for revision and perfect classification, and give dispatch to the work of passing on new applications for a patent. This measure will meet with hearty approval from all inventors who are now caused to suffer loss on account of the tardy manner of examining new applications in the past.

Almost all magnetic iron ore deposits are natural magnets or dipping needles, held in place by the inclosing wall rocks.

The magnetic phenomenon witnessed by using a dipping needle in the hand of the operator over the apex or outcrop of a deposit of magnetic iron ore is extremely interesting, and to the inexperienced is rather perplexing. At the northern end of the deposit, the needle dips vertical, or say 90 degrees —, or north end of the needle, and generally decreases from the center line of the deposit on each side of that line by degrees, as the center line is departed from. In the same manner, at the south end of the deposit of magnetic iron ore, the dipping needle will generally dip vertical, or say 90 degrees — or south end of the needle, along the center line of the deposit, and the strength of the attraction will decrease as that line is departed from towards either side. Between the negative and positive points of magnetic attraction, there is a center area or pivot of no attraction, where the dipping needle vibrates horizontally, and at places points in any direction, when moved slightly one way or the other. That point is the center of the deposit of ore, and corresponds to the pivot of the dip needle. The following in this connection, from the *Mining and Scientific Press*, is interesting reading:

"A LOCAL magnetic pole—a point where a "dipping needle stands vertical—is reported "by Prof. Leist to exist at Kotchetovka, in

"the Russian province of Kursk. It is necessary to move twenty yards from this spot to change the direction of the needle one degree. At the point of this interesting anomaly, the ordinary compass needle swings freely, stopping indifferently in any direction."

The learned professor was not apparently acquainted with the use of the dipping needle, and did not know that he had discovered a body of magnetic iron ore, or, possibly, pyrrhotite, an ore of nickel and cobalt, or chrome iron ore, although there may not be a pound or piece of iron ore to be seen, being covered with surface soil, hence the value of the intelligent use of the dipping needle in tracing the extent of such deposits.

The organization of joint-stock companies has become a recognized occupation in both the United States and European countries. The extent to which such companies have increased have been productive of the encouragement of fraudulent operators. Their being no special law under which the fraudulent promoter could be restrained or prevented, the opportunity has been taken advantage of to its fullest extent in the European capitals or centers where company promotion has reached the greatest development. The common occurrence of fraud in this connection, and to such an extent has this fraudulent means of obtaining capital under false pretences been carried on by unscrupulous promoters in France, that legislative action is about to be taken to stop or suppress the evil. M. Fleury-Ravarin, a deputy for the Rhone, has presented such a measure, which has received the unanimous approval of the Commission d'Initiative, with the recommendation of its discussion by the Chamber of Deputies. The difficult task of making people honest by act of the legislature has been forced upon the French Government, on account of the numerous frauds perpetrated on small investors, who do not as a rule take the precautions to make inquiry as to the resources and genuine character of the enterprise, as larger investors generally do. In future, it will be impossible to float a stock company without giving security and guaranty of the genuine nature of the enterprise. Every prospectus in future must give all details of the proposed company, and any false statements will cause the promoters to be held liable for heavy penalty. To prevent a promoter from absconding when threatened with expense and legal prosecution, it is compulsory that the enterprise must be recommended by a financial institution of more than two years' standing in France, and whose guaranty will secure the investor against loss from this cause. The banker, under these circumstances, becomes responsible for the new company, and will take care to make due inquiry in advance as to the genuine nature of the enterprise. The foregoing reasons apply equally well to this country, and make the necessity for a uniform Federal law to govern all limited or joint-stock companies a necessary measure.

The minerals of any country are one of the chief assets in the reserve account of the national resources. To preserve this source of the people's future wealth is a duty incumbent on each mine owner, by operating the

mine in a safe and permanent manner, so as to make the life time of the mine as long as possible. It is in this regard that the services of a mine inspector are considered necessary in most mining states and foreign countries, as well as in protecting the lives and interests of employees. Under individual ownership of mines, the matter of inspection is as necessary as under the Government ownership, as the mine owner, although vested in the fee simple to the minerals, has a duty to perform to posterity in operating the mine with due regard to deep mining. Workmen and leases especially, when employed under contract to extract ore, require special supervision, to guard against the mine being left in an unsafe condition for future operation.

The common custom among mine owners, of operating their properties with regard to the present time only, has the effect of robbing the State of much mineral ground of future value. This is particularly true of the mining industry more than any other occupation, on account of the rapid advances which are being made each decade in the inventions and improvements in the manipulation of ores and in metallurgy. In the steady progress made in all branches of the industry, a lower grade of ore is being worked or made of value, hence the urgent necessity for operating mines with a due regard to future possibilities and safety. If the mine owners of the country, who ought to be most interested in the permanency of mining, do not leave sufficient supports to make their mines safe for future extraction of low grade ore left in the workings, then it is the duty of the mine inspector to interfere, or, if there is no inspector, it is high time that one was appointed, to care for the rights of the people and in the interests of deep mining and future development of the industry.

The present war with Spain, although greatly to be regretted on account of the valuable American lives which have been already, and may yet be, sacrificed in the cause of liberty and humanity, in freeing the dependencies of Spain from oppression and misrule, has still a little good mingled with the evil. It has stimulated and increased iron and coal mining, created a demand for native sulphur in place of foreign importations, and advanced the market price of first quality graphite. These are some of the less important changes.

The new Revenue Bond Bill, which will increase our volume of money, by causing the silver bullion on hand, comprising seigniorage to the extent of \$42,000,000 to be coined, will relieve the Treasury of about \$20,000,000 a year. If the present Secretary, Gage, who is a believer in limited coinage and gold coin as the circulating medium, carries out the intention of the bill to the coinage capacity of the mints, it will still take considerable time to work off the large amount of silver bullion on hand. This measure will cause in time an increased demand for silver.

The acquisition of the Hawaiian Islands, Philippine Islands Ladrone Islands, Cuba, and, possibly, Porto Rico, will in the near future furnish a market for many million dollars of United States silver. This increased market for silver, with the introduction of better laws and a stable form of government in these islands, will have the desired effect of engrafting American civilization and customs among the natives, and cause a greater

demand for silver coin among the inhabitants of these rich islands. As has been found to be the case among the native population of India, these people will soon acquire the habit of hoarding silver coin, and furnish a demand equal to that of the poor classes of other countries. Freedom from the oppressive taxation of Spain will stimulate industry among these people and increase their purchasing power for silver coin. If the present war results in giving a needed market for the product of the silver mines of the Western States, the curse of the present war will have a silver lining.

#### THE MONEY ISSUE STILL PENDING.

One effect of the war will be to postpone final action on internal or domestic questions. For the time being at least, the tariff will be permitted to rest. It has been an issue for more than fifty years, and the people have become tired of the continual talk on that subject. Besides, every change affects values and disturbs business.

The most important question now before the people is that of a monetary system. As we have before said, our present system, if we have one at all, is complex and cumbersome, and it needs to be simplified and made definite. As it stands, it has really no defenders, and is tolerated because the new plans urged are radically different in theory, and there is not enough concordance on any line to bring about a definite result.

The line between the main forces is well enough defined, but there is a sufficient number holding modified views to impede the progress towards a final solution of the problem, or, in other words, to prevent for a time at least legislation that will be final and comprehensive.

On one side, the contention is that the gold standard should be made the basis or foundation of the system—that there shall be no other metal money except subsidiary silver coins, and that the superstructure shall be only paper circulation issued by the banks, which is to be redeemable only with gold.

On the other side, the contention is for a double standard represented by gold and silver coins of equal debt-paying power, bearing the relation of 1 of gold to 16 of silver, in accordance with the coinage laws that existed for eighty years prior to 1873, and a ratio recognized in the Bland-Allison Act of 1879, the Sherman Act of 1890, and the Revenue Act recently passed by Congress which requires \$18,000,000 to be coined annually from the silver bullion lying in the treasury, and that both gold and silver shall be coined freely and without limit. On this side it is maintained also that all paper money shall be issued by the government, and in sufficient volume to meet the demands of domestic trade, and made redeemable in gold and silver coins at the option of the government.

These are the well-defined and radically different plans, and thus far neither side has been able to rally strength enough to carry its plan, and the intermediaries have sufficient strength to probably prevent either plan from being adopted; at any rate, it will be a well contested struggle, with the prospect that legislation in the end will be on some line in modification of the divergent theories.

On the one side it is maintained that our money system should correspond with that of the leading European nations, and that adaptation to foreign trade should be the controlling principle. On the other, it is argued that the system should be such as shall recognize the importance and needs of domestic

trade, which is more than fifteen times greater than our foreign, that if the home commerce is provided for adequately, foreign commerce will take care of itself.

It is pointed out that there is no international money, and never has been, that balances of trade are settled with bullion and not with coin, and further that we have attained such a commercial position that trade balances can hardly be adverse to us. This calculation is supported by the facts that we always export largely of breadstuffs and provisions, more agricultural products than we import, and that we have entered upon a career of exporting manufactures in excess of imports, the balance in our favor during the last fiscal year being about \$40,000,000, and that our superior natural resources will enable us to maintain this favorable attitude. Hence, it is asserted that we shall not be so troubled about trade balances that we shall need to shape our financial policy so as to be able to command an immense volume of gold. The laboring oar will be shifted to the countries which must pay balances to us.

The two sides are insistent, and the outcome may be postponed indefinitely. It would be best if some plan could be settled upon so just and satisfactory that the question might be set at rest. The very discussion of economic questions, with a view to making changes, is always disconcerting, people engaged in business want certainty, and, as long as there is uncertainty, there will be reluctance to engage in new productive enterprises. Our population has become so great that there should be no embarrassments to the energies and agencies that will afford employment to the laboring classes. A plentiful volume of good money is a tremendous stimulant to industrial and commercial enterprise. The idea is commonly accepted that whatever will pay debt by legal compulsion is good money.

#### Gas, Gasoline, and Oil Vapor Engines.

The entire lack of literature on explosive motors made in the United States, with the exception of such as have appeared from time to time in our journals and magazines, and the constant inquiry for information on the subject, has induced the author of the work on Gas, Gasoline, and Oil Vapor Engines to endeavor to present in practical shape for the ordinary reader the principles and practice of this class of motors, as they are manufactured in our own country. German, French and English books on gas, gasoline and oil engines scarcely allude to American engines or American practice.

The author says in his preface: "He hopes that, by the publication of this work, many inquiries will be answered, and that seekers for small power will find in the explosive motor the economical prime-mover they desire."

From a careful perusal of the book, it is our opinion that it has far surpassed all the author has claimed for its merits.

The subjects treated in this book are timely and interesting, as there is no doubt as to the increasing use of gas, gasoline and oil engines, particularly for small powers. It gives such general information on the construction, operation and care of these engines that should prove valuable to any one in need of such motors, as well as those already having them in use.

This book is the second edition, revised and enlarged, with 270 illustrations, and can be had by applying to Norman W. Henley & Co., of 132 Nassau Street, New York City.

#### Patents of Interest to Mining Men.

Messrs. Townsend Bros., Solicitors of Patents, 9 Downey Block, Los Angeles, California, report the following recent patents of interest to mining men:

June 7—605,378 and 605,380. Process of Making Aluminum Sulfid and Process of Producing Aluminum Sulfid and Reducing same to Metallic State. Henry S. Blackmore, Mount Vernon, N. Y., assignor to the Pure Aluminum and Chemical Company, of West Virginia. These two patents relate to improvements in producing aluminum and the process consists in transforming the aluminum oxide into sulfid by simultaneously conveying into a chemically inert molten bath capable of dissolving aluminum sulfid a mixture of aluminum oxide and carbon bisulfid. The process of reducing the sulfid to a metallic state consists in simultaneously converting the insoluble aluminum oxide into soluble aluminum sulfid while in a molten bath, and dissociating the soluble aluminum sulfid by electrolytical action.

June 7—605,451 and 605,464. Continuous Smelting Plant. William S. Reese and Edward E. Armstrong, Natrona, Pa., assignors to the Pennsylvania Salt Manufacturing Company, Philadelphia, Pa. These two patents comprise improvements in smelting plants, essentially consisting of a blast smelting furnace, a movable settler therefor, a series of reducing furnaces, and means for feeding the metal of the settler into any one of said reducing furnaces.

June 7—605,266. Feeder for Stamp Mills. George Wood, Prescott, Arizona. Filed June 12, 1897. An inclined chute is arranged beneath an open hopper and is suspended to shake; an arm projects into the path of the tappet and is adapted to shake the chute to discharge the ore into the battery.

June 7—605,458. Process of Making Sulfids. Henry S. Blackmore, Mount Vernon, N. Y. Process for producing aluminum and other sulfids which consists in exposing a molten aluminate to the action of carbon bisulfid vapor. Patent No. 605,812, dated June 14, issued to the same party, is for the purpose of transforming aluminum oxide into aluminum sulfid which consists in exposing a fused bath containing dissolved aluminum oxide to the action of carbon bisulfid vapor or gas. Patent No. 605,694; same date to the same party, is for the purpose of converting metallic sulfids into metallic cyanids, sulfo-cyanids, and ferrocyanids, which consists in exposing molten sulfids to the combined action of a metallic carbide and nitrogen gas.

June 14—605,512. Apparatus for Removing Gravel from Frozen Ground. Ralph H. Pinkham, Wakefield, Mass. Filed Jan. 29, 1898. An apparatus for removing gravel from frozen ground, comprising inner and outer pipes terminating in a tapering, perforated point adapted to be driven into the ground, a hot water supply communicating with the space between the pipes, a pump for raising the material through the interior pipe, and an intermediate gravel receptacle between the pump and the tube.

June 14—605,615. Ore Stamp. David M. Smyth, Pasadena. Filed June 9, 1897. The combination with the stamps and the electromagnets for operating the stamps, of a switch that is actuated by an upward movement of one stamp to change the circuit connections for raising the other stamp.

## ELECTRIC ROCK DRILLS IN MINING.

Electric rock drills are now being used in different parts of this country, and under a wide range of conditions. While among many the opinion still exists that the electric rock drill is not in every way a success, those who have watched the gradual improvement of the Marvin Drill have become fully convinced of its superiority over other machines. The extremely rugged conditions met with in mining work, and the many failures of newly introduced machinery, have caused many mining engineers to be rather conservative in adopting new machinery, if not skeptical of any machinery which they have not tried. The electric drills, as now manufactured by the Marvin Electric Drill Company, of Canastota, New York, are being enthusiastically received by the mining engineers who have had an opportunity to witness their performance. Within the past few years these drills have been greatly improved, and it can be said, without reserve, that they are now meeting all the requirements of tunnel and quarry work, and in all cases giving unqualified satisfaction.

The successful working of a rock drill depends principally upon three elements, namely: simple design, strong and rugged construction and economical operation, both in point of drilling efficiency and cheap maintenance. These necessary requirements are fulfilled to the utmost degree in the Marvin Electric Drill, and, in addition, this drill is particularly adapted to quarry and mining work, owing to the extreme flexibility of the system.

Those who have watched the development of electrical engineering will realize that today electrical apparatus is turned out which embodies the most rugged mechanical design and high electrical efficiency. Electricity lends itself especially to power transmission, owing to the readiness with which the wires can be strung and the small cost necessary. The advantages of wires over any other mode of transmission is today an acknowledged fact. Wires may be strung in a most temporary manner, and branch lines may be carried to distant points where the power is required without a large outlay of money, and requiring, practically, no expense to keep in order. In prospecting work, where it becomes necessary to convey the power a long distance, and across rough or mountainous country, the electric wires present none of the difficulties encountered in running a pipe line, or moving a boiler from point to point, as the work changes; and, moreover, the wires may be quickly shifted or extended, as the work changes with little attending expense.

Referring to figure 1, showing the section

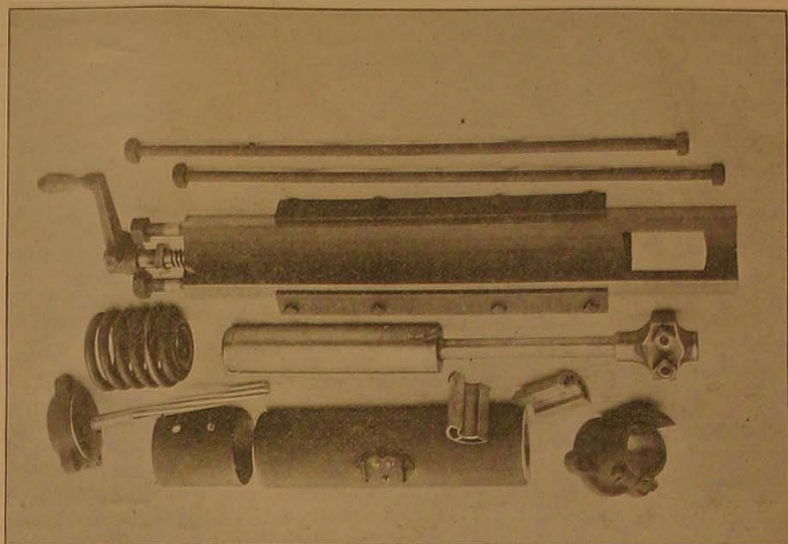


FIG. 2.

of a Marvin Electric Drill, it will be observed that the construction of this machine is extremely simple. The main portion of the drill consists of a coil body, comprising two coils of wire (3, 3) which form a double solenoid. Within this solenoid is developed the magnetic force which drives a soft steel plunger (1) to and fro, in the same manner that steam actuates the piston in a steam drill. The plunger is a soft steel forging, reduced in section throughout one portion, and at the end is formed a massive chuck (6) to receive the bit. The plunger is indestructible, and will withstand the shock of the blow without breakage or crystallization. The coils are wound with square copper wire and insulated between layers and turns with pure India mica, thus rendering the coils mechanically indestructible and fire-proof, should they receive more current than they are calculated to carry. These coils are incased in an iron jacket, which is calked to the heads of the coils, thus making the coils absolutely water tight. The current is directed into the two coils in alternation by the generator itself, thus doing away with anything in the nature of a valve or switch on the drill. The backward stroke of the plunger is checked by the buffing spring (7), which returns the energy momentarily stored in the spring to the forward stroke. The turning of the plunger is effected by a rifled bar and ratchet device in the back head, similar to that used in other drills. All parts of the drill are equally strong, and in the hands of the most ignorant men, no damage

can be done to the machine. The wearing parts can be easily and cheaply renewed.

By referring to figure 2, showing the drill pulled apart, it will be observed that the different parts of the drill interlock, and are held together by two side bolts and two studs, the latter being integral with the concave slide upon which the different parts are held.

The generator, shown by figure 3, for operating the drills is an extremely simple machine, being so designed that it can be taken down and packed into boxes not exceeding 300 pounds each. This feature becomes necessary, in order that the apparatus may be transported on mule-back.

Three wires are carried from the generator to the centre of the working area, where branch lines may be led to the different drills. The drills operate independently of one another, and the generator regulates the voltage, so that each drill will receive the proper amount of current.

Figure 4 shows the 6" drill mounted on an adjustable column, for tunnel or general underground work.

Figure 5 represents the 6" drill in actual operation underground.

Figure 6 shows 7" drill on tripod mounting.

## Electricity in Mining.

The San Francisco *Journal of Electricity* publishes the following interesting and comprehensive article on the chief terms and principles which are fundamental in electrical practice:

It is not a difficult matter to convey to managers of mining properties an understanding of the chief terms of electrical parlance, by comparing these terms with the various conditions of water—that agency with the action of which none are more familiar than miners themselves. As one miner's inch, the unit of volume of water, delivered under a pressure of 480 feet head, will produce one mechanical horse power, so will one ampere, the unit of volume of electricity, if delivered under a pressure of 746 volts, produce one mechanical horse power. The analogy is practically perfect and the busy man of mining affairs who has to do somewhat with electricity need not necessarily delve into electro-techniques beyond that depth which returns the understanding that almost every electri-

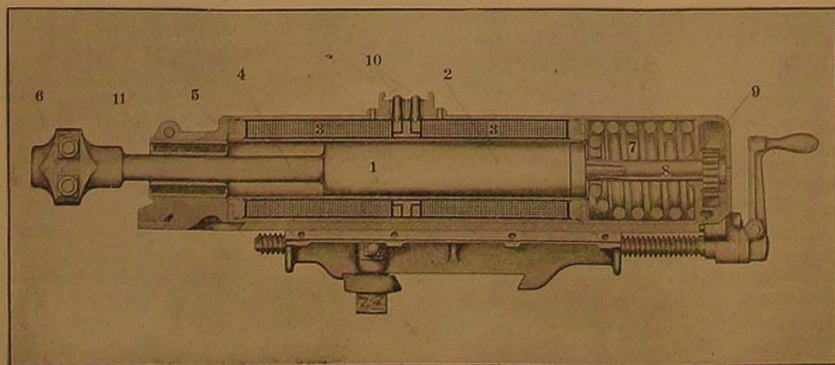


FIG. 1.

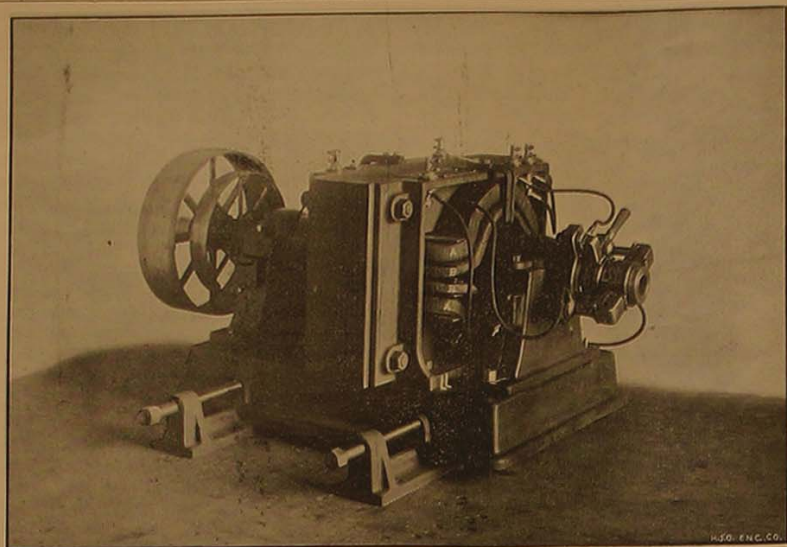


FIG. 3. (See Page 9.)

cal term in every day use finds an analogue in a familiar utilization of water.

It has been shown that the ampere is comparable to the miner's inch, and that the volt is comparable to the head-in-feet, or the pressure of a stream of water. The power obtainable from a stream of water may be found in the product of its weight and velocity—this product being expressed in "foot-pounds"—and there are 33,000 foot pounds to a horse power. Similarly the power obtained from a current of electricity is found in the product of its amperes (weight or volume) and its volts (pressure or velocity)—this product being expressed in "watts"—and there are 746 watts to a horse power. Where any power of considerable magnitude is under consideration, its equivalent in watts would be so great, numerically as to be inconvenient of expression, hence the Greek prefix "kilo" signifying 1,000 is used exactly as in the metric system, and thus the energy of one hundred and seventy-five thousand watts is expressed as 175 kilowatts. Since in the watt is represented the product of volts and amperes, it is obvious that 175 kilowatts, for instance, may represent an energy of 10,000 volts and 17.5 amperes, or that the two factors may have any value which will give 175,000 as their product. Here the cited analogue still holds, for the same is true of the energy of a stream of water when expressed in foot-pounds.

But water in flowing through a pipe line encounters resistance from friction with the sides of the pipe and from bends or other changes in the direction of flow. Hydraulics characterize the resistance as the "co-efficient of resistance," which is a variable quantity, and which is not expressed in terms of standardized unity. It is practically in the same manner that a current of electricity, in traversing a wire, encounters resistance, the amount of which varies greatly with the metal of which the wire is made. Silver offers the least resistance of any metal to the flow of electricity; copper has about 98 per cent of the conductivity of silver, while iron has less than one-sixth of the conductivity of copper. In electricity the unit of resistance is the "ohm" and its value is such that when a pressure of one volt is applied to such a length or cross section of wire that the current which flows through the wire will be one ampere, then the resistance of the wire will be one ohm. A parallel to this would be

found in hydraulics where the length and diameter of a pipe is such that under a head of one foot, exactly one miner's inch of water would flow through the pipe. The co-efficient of resistance of this pipe is analogous to the term of "ohm"—the unit of electrical resistance.

Electricity, if of the direct current form, traverses the conducting wire in one direction, as does water in a pipe line. Sometimes pulsating currents are used, and these, like water in the supply pipe of a hydraulic ram, flow in a single direction, but are interrupted periodically. Then there are alternating currents of electricity which are of a vibrating character and oscillate in one direction and then in the other, alternately, as water would do in a pipe, each end of which is connected to a respective side of a piston chamber having no valves, in which event the direction of flow of water through the pipe would alternate with the direction of the piston stroke.

It is unfortunate for lucid analogy that there is no practical, familiar parallel in hydraulic practices by which the nature of the varieties of alternating currents may be illustrated, and this misfortune is the greater because of the knowledge that alternating currents are destined to take a far more important part in all mining applications of electricity, except in electro metallurgy, than any other form of the ubiquitous agency called electricity. Hydraulic conditions of suppositional forms must therefore be improvised to complete the analogue.

An oscillating current of the form described, in which electricity flows back and forth as water in a pipe connected to a piston chamber without valves, forms the simplest type of alternating currents, and such a current is termed a "single-phase" current. This may be fixed in mind by conceiving the water device to be driven by a single piston, actuated from a single crank disc, throwing the water in the pipe into a state of single oscillation or single alternation—technically "single phase." The rate

of this oscillation, when applied electrically, is termed the "periodicity," or the "rate of alternation" of the circuit.

Suppose, however, that there are two such single pipes, entirely independent of but paralleling each other, and containing water alternated in flow as in the previous instance, by valveless piston chambers. If the pistons of the respective chambers are always in unison as to speed and position as they would be were they driven from the same crank pin of a shaft, then the volumes of water in the two pipes would pulsate in perfect harmony as to rate, speed and direction, or to use an electrical term, the currents would be in "synchronism." But should the two pistons be actuated from independent crank pins placed diametrically opposite on the driving shaft, then the flow of water in one pipe would be exactly opposite to that of the water in the second pipe, which may be described as a "two current" or "two flow" system. It is precisely such a condition as this which exists in the two electrical circuits of the "two phase" alternating current electric transmission system.

Again, instead of the two valveless chambers and pipe system just described, assume that there are three such systems, each identical in construction to the others, with the solitary exception that the pump pistons are respectively driven from crank pins placed 120 degrees apart on a shaft, in which event the direction of flow in pipe No. 2 will be one-third of a stroke or revolution behind that in pipe No. 1. Similarly system 3 will "lag" one-third of a stroke behind No. 2; system No. 1 will lag one-third of a stroke behind No. 3, and so on, all this being analogous to a "three-phase" alternating current system. Thus are illustrated the different types of polyphase systems,—as all varieties of alternating currents in excess of the single phase system are termed.

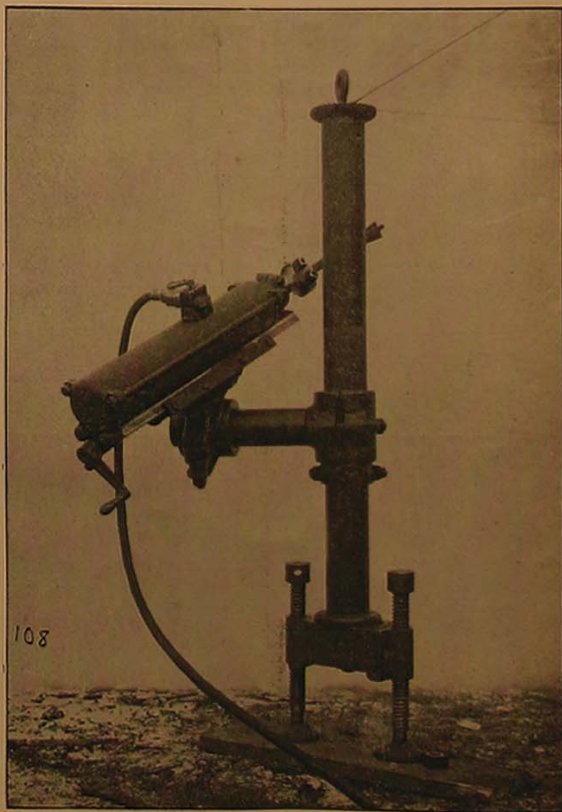


FIG. 4. (See Page 9.)

But what is the advantage of different phases? Simply this: As hot water in flowing through a pipe influences the temperature of the air surrounding it, so does electricity in flowing through a wire influence the ether surrounding the wire—in fact, magnetizes it, the direction of magnetic pull (so to speak) varying with the direction of electric current flow. A north magnetic polarity and a south magnetic polarity will attract each other, as all know, and owing to the fact that in two-phase systems the direction of electric current flow in the two circuits is always exactly opposite, the ether surrounding one wire is always of exactly opposite magnetic polarity to the ether surrounding the other wire, hence in two-phase electric motors there is always a state of mutual magnetic attraction between that part of the motor containing the "leading" phase and that part of the motor containing the "lagging" phase.

Single phase circuits are by nature restricted to but a single magnetic polarity of the surrounding ether at a given interval, and as it takes opposite magnetic polarities to exert attraction toward each other, it is evident that the production of power from single phase current is seriously handicapped by its own inherent characteristic. This idea roughly explains why the development of single phase motors is so tardy.

In three phase systems, the phase impulses follow each other consecutively with absolute regularity, and inasmuch as "fields" or atmospheres of magnetism attend the appearance or disappearance of each impulse it is evident that the revolving motion of these consecutive impulses impart a similar rotation to the attending magnetic field, which explains the term "rotating field." If a strong magnetic field revolves, obviously any magnetic body placed within that field will tend to revolve with it and to this principle is due the three phase motor.

Finally, the transformer or converter is just what its name indicates, or rather, what its name would indicate were the word electrically prefixed. It is merely a device for automatically transforming electrical energy or "wattage" from one value to another. The transformer is to electricity what an appliance would be to hydraulics that would take the energy of a small stream of water at high head and transform it with but small loss to the energy of a large stream of water at low head, or vice versa. Were there an



FIG. 6. (See Page 9.)

equivalent appliance in hydraulics, this "hydraulic transformer" convert the irresistible tidal flow, or any portion of it, to a much smaller volume of water at a tremendously high head, thereby enabling an easy solution of the long hoped for utilization of the tides for power purposes.

It must be borne in mind that the foregoing has been written with the idea of imparting most elementary ideas to those who have neither time nor inclination to become possessed of any but a superficial knowledge of the chief terms and principles which are fundamental in electrical practices. The wisdom of experience has well taught that "a little knowledge is a dangerous thing," and the above is a little, indeed, a very, very little, of the knowledge of which science is possessed concerning electricity, and to accept every statement given as an indisputable exposition of most recent practices would be an error, for, as intimated, an elementary and brief explanation of a profound subject can not be swerved from its purpose by considerations other than those of the barest generalities.

Miners interested in electrical power will find this article well worth preserving.

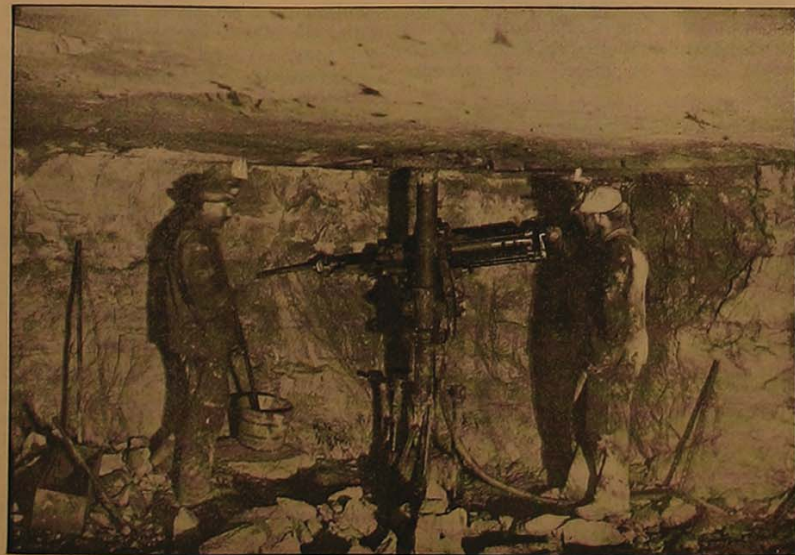


FIG. 5. (See page 9.)

### The International Mining Congress.

The International Mining Congress opened under auspicious conditions with upwards of 1000 delegates present, representing twenty-seven states and territories. The address of welcome was made by Gov. Wells.

The committees on credentials, organization and other details reported, which set the machinery in full operation.

One of these committees was directed to consider and formulate a report upon the establishment of a national department of mines and mining; the other was to report on the revision and codification of the federal mining laws. Both committees will be ready to present their conclusions when called upon by the congress.

Among the subjects to be presented in papers prepared especially for the occasion by men of wide experience are the following: Coal and Coke; Advances in Methods of Concentration; Relation of the Geological Survey to the Mining Industry; Relative Merits of Cyaniding and Chlorination; Mine Inspection; History of Reduction of Smelting Costs; Long Distance Transmission of Electric Power; Fuel Cost in Pumping; Recent Advances in Smelting; A New Treatment of Low Grade Ore; Copper; Relations of Investors and Miners. All of these papers are ready or in course of preparation by men conspicuous for their knowledge of the subjects treated. As they are presented, they will be discussed by the congress, and it is expected will prove of the greatest practical value.

The Weber Gas and Gasoline Engine Co. of 434 S. W. Boulevard, Kansas City, Mo., report increased activity in their works, being well booked with orders at this time and running over time. They have just installed another 74" Boring Mill.

All business men and those doing business in the United States should have a copy of the new *War Revenue Bill* passed by act of Congress, approved June 13th, 1898, for handy reference. J. Bell of 121 N. Broadway, Los Angeles, Cal., has recently published a small booklet of the new law, reproduced by photo process from a copy printed in the Government Printing Office at Washington, D. C. Send twelve cents for copy.

## CORRESPONDENCE

## UTAH

SALT LAKE, July 4th, 1898.

EDITOR JOURNAL:—There is nothing new to report in Ajax. The work of sinking the main shaft goes steadily on. Alice was inactive, and the same may be said of Alliance and Anchor. Buckeye was stronger. The assessment of  $\frac{1}{4}$  of a cent per share will become delinquent on the 27th. Bullion Beck was weaker. There is no information given out relative to a new contract with the smelters. Centennial-Eureka was stronger on renewal of rumors that dividends will be resumed. I can obtain no information to this effect, however. Chloride Point was stronger on inside buying. The mill is working steadily, and a cyanide shipment is in order.

Dalton grows weaker and weaker. Dalton & Lark was decidedly stronger. The mine has been cleared of water and mining operations will be resumed. The company, it is anticipated, will be able to continue its monthly payments, upon the balance due for the purchase of the Lead Mine group, and stockholders cannot hope for any return in the shape of dividends for some time to come. The amount of this particular indebtedness is said to be \$66,000. Daly was steady. Daly West quotations were unchanged. There is nothing of importance to relate as to Four Aces. The management is pushing development work.

Galena was featureless. Geyser Marion did not hold its strength on the dividend announcement. The dividend of 2 cents per share was paid to stockholders on the 30th. Good reports continue to come in from the mine. Grand Central continues to hold the interest of the public. Big shipments of high grade ore are coming in regularly. The stock was steady at \$7 bid and offerings are very light. Horn Silver paid its dividend of \$20,000 on the 30th. This carries the total to \$5,140,000. Good orders are out for Little Pittsburg around 2½ cents, but little stock is being offered below 3 cents.

Sunbeam holds up fairly well. Silver King was steady, but no stock is coming out. Sacramento is gradually declining to a basis, where its value is in keeping with the dividends paid. The regular dividend of \$5,000 was paid on the 30th. The mill is treating 150 tons a day regularly. South Swansea paid its dividend of \$7,500 on the 30th. The stock was weaker and slumpy this week. Swansea was strong and in demand. The mine is looking exceedingly well.

## Miscellaneous Mining News.

## ALASKA.

A party of gold seekers that left Flemington, N. J., on March 1st, for the gold fields, returned on June 21st. The party tried to reach the interior by way of Yakutat and Disenchantment Bay, but only got as far as the fourth glacier when they found it utterly impossible to go further. They report that there are about 400 on the way to the foot of the glacier who will succeed no better. Gross reports have been circulated about the different districts they found. In one case a man who was said to have brought out \$5,000 in nuggets and to have refused \$30,000 for his claim, had never been to the gold fields at all.

## ARIZONA.

The Omaha World says: "By far the most interesting and remarkable display in the mining building is the exhibit from Arizona. That has been given the place of honor. It consists of a magnificent collection of the copper minerals from the Copper Queen mine, Bisbee, Ariz., particularly azurite and malachite. This collection was made with a view to the Paris exposition as well as Omaha. For the exhibit four large showcases were sent that were used by the same company at the World's Fair. Dr. Day could not make them suit his purpose for his idea of showing his exhibit properly, and he sent to Washington for an enormous plate glass case, which will be the first object seen on entering the rotunda.

## CALIFORNIA.

## KERN COUNTY.

About seventy tons of ore, averaging about \$85 per ton, have been run at the Johannesburg mill during the last ten or twelve days. Another rich strike has been made in Trilby No. 2, and over \$3000 was taken out in one day. The ore is fairly bristling with the yellow stuff we are all looking after.

Ore is being shipped to the Barstow mill right along, each car being loaded with about twenty-five tons, and a watchman accompanies each car. His duty is to ride down on the car and guard it to its destination, where he turns it over to Mr. Harry Cooper and returns to guard the next lot down. Thirty stamps of the new mill are kept constantly dropping on this ore. It is shipped loose instead of being sacked. The mill seems to be in good condition, and is doing good work.—*Randsburg Miner.*

It is rumored that a fifty-ton smelter is soon to be erected at Randsburg, which is to be worked on a new and very cheap principle. Gases produced from crude oil is to serve for fuel. Experiments with a working model are said to justify anticipation of the success of the enterprise. Miners will await further developments with interest.

## LOS ANGELES COUNTY.

Morris and Robb, of Colton, have returned from a visit to their properties near "Old Baldy" mountain. They report that the Hocumac Hydraulic Placer Mining Company in that district is actively engaged on their claims.

## RIVERSIDE COUNTY.

J. C. Littlepage, of San Bernardino, has purchased a half interest in the San Bernardino mine in the Dale district. This claim is pronounced by old miners to be one of the best in the Dale country. There is between \$10,000 and \$12,000 worth of ore in sight.

Information is received that a four-foot vein of rich ore has been uncovered in the Harriet Belle mine, near Riverside.

The tailings of the Desert Queen mine will be cyanided in the tanks of the Old Virginia mine by Jackson Steele, who has purchased them.

## SAN BERNARDINO COUNTY.

E. H. Keith, of Oro Grande, reports mining business quiet in the Silver Mountain district. He is interested in the Fordroiant mine. Some work is being done there as

well as in most of the other gold mines of the district. The Side Winder, owned by Oro Grande and Los Angeles parties, is attracting attention. It is expected that a force of workmen will soon be put to work there. A smelter at Oro Grande is the great desideratum. For such an enterprise there is a splendid opening. The investment would, Mr. Keith believes, pay richly and be of incalculable benefit to the mining interests of the district. There are many good silver mines in the district, but all are idle.

## SAN DIEGO COUNTY.

Receiver Pauly, of the Golden Cross mines, last week presented his seventh report to the superior court, covering the month of May. The report says that a large profit is being made out of the operation of the mines. From the clean-up on June 1, there was realized \$46,444.94, and from other sources \$1,499.50 was obtained.

The total expenditures, including \$11,500, which under stipulation is paid to the defendants in the action each month, amounted to \$48,021.73. The payroll for the month was \$10,300. There was \$56,903.73 on hand on the 31st of May. Forty additional stamps were started on June 1, and Receiver Pauly says that he believes that he will be able to furnish ore for them as well as for the 100 stamps which have been in operation. The report was approved by Judge Torrance.

## COLORADO.

## Cripple Creek Notes.

All the shipping mines were busy last week and the same old story of crowded cars, ore bins, wagons, samplers, reduction plants and smelters has to be told. We do not have to go very far to see the effects of the great activity among the shippers, for at the works of the Colorado-Philadelphia Company, at Colorado City, (the largest chlorination plant in the country) an immense amount of ore is handled, and there are always huge piles of it over there awaiting treatment. That the big plant is busy and successful is shown by the fact that the men's wages there have been lately subject to a considerable increase. It was a voluntary move on the part of the management, but was not the less welcome to the workers.

Following are a few of the shipments credited to the Matoa during the past few days: 56½ tons, average 2.95 ounces in gold per ton, aggregate net value of lot, \$3,485.86; 54½ tons, average 2.25 ounces in gold per ton, aggregate net value, \$1,489.96; 55 tons, average 2.65 ounces in gold per ton, aggregate net value, \$1,475.59; 54 tons, average 2.81 ounces in gold per ton, aggregate net value of the lot, \$2,234.47.

Lessees on the Specimen continue busy and are sending out numerous lots of low grade ore together with one or two assortments of high grade. During the past ten days or so the following have been recorded: From lease Q, 4 tons of \$17 ore, and 4 tons of \$13.70 ore; from lease F, 2½ tons of \$94.85 ore; from lease F No. 2, 7½ tons of \$14.90 ore; from lease P No. 2, 4 tons of \$38.10 ore; from lease O, 4 tons of \$24 ore, and 7 tons of \$12 ore; from lease P No. 2, 5 tons of \$13.80 ore.

The following shipments were made by lessees operating on various parts of the Union Company's properties last week: From the Orpha May, 15 tons, value \$76.90 per ton;

4½ tons, value \$53.20 per ton; 2½ tons, value \$256.60 per ton. Two shipments to mill and smelter yet to be heard from. Dump ore: 7½ tons, value \$46.40 per ton; 4½ tons, value \$17.70 per ton; 5½ tons, value \$22 per ton; 2 tons, value \$36.20 per ton. From the Porcupine: 5 tons, value \$30.70 per ton.—*Mining Investor*.

#### At Leadville.

The Home Mining Company last week placed a few men at work at the Bon Air and Penrose properties cleaning up and making repairs preparatory to starting the pumps. It will take about ten days or two weeks to complete this preparatory work, after which, it is stated, the pumps will be started at once, as the other members of the Leadville Pumping association who are to assist in the downtown properties have everything in readiness to start up. This is the first work that has been done in this territory since the strike, and the beginning of the new work means much for the camp. Even after the pumps start, which now seems possible in two weeks, it will take at least 90 days to clear the workings of water.

#### IDAHO.

The Florence *Miner* says: "The Blossom mine has been bonded to J. H. O'Dell. We understand the price is \$22,500, with \$2,500 down, and the balance in three, six and nine months. This is the same mine which was bonded by Captain Moore last fall for \$10,000 and \$1,000 forfeit paid, when from some cause unknown to us the bond was allowed to lapse and the money paid forfeited. At that time it was considered by many as an ill omen for the camp, as it was one of the most promising properties in the district. After the mine fell back into the hands of Mr. Fisher and his partners they spent some time in further development, and have now made the deal as described above. We understand that the mine goes into the hands of parties who are abundantly able financially to thoroughly equip with first-class machinery, and we predict it will soon be one of the gold producers of Florence camp. Messrs. Dahl, Olson, Fischer and Jarren are now pumping the water out of the mine and putting it in shape to work a large force of men.

#### MICHIGAN.

The Michigan Copper Mining Company was organized some months ago with a capital stock of \$2,500,000, to operate in Rockland and Greenland townships, Ontonagon county. A. M. Low of Detroit secured options on 4,720 acres of land, owned by the heirs of Benjamin Jeffs. The work of developing the property, it is said, will begin at once. The officers of the corporation are: President, Edwin F. Conely of Detroit; vice-president, William B. Jeffs of Rockland; secretary, Alfred M. Low of Detroit; treasurer, E. H. Flinn of Detroit. The directors are: George N. Fletcher, J. B. Book, Albert Pack, Patrick A. Ducey, Jerome Croul and George Stevens.

#### MINNESOTA.

The previous low freight rates have taken a drop and ore is being openly carried from Duluth, Two Harbors and Ashland to Lake Erie, little less than 1000 miles, for 45c. a

gross ton, and it is stated that private charters are made at 5c. less than that. It costs the vessel that carries this ore about 17c. for handling the ore—2½c. for trimming at the port of shipment, and 14 to 15c. a ton for unloading, this sum taken from the 45 or 40c. for the haul leaves only 28 to 23c. a ton net for the ship. These rates are the lowest ever made, and yet it is generally understood, denials of the interested vessel men, that the larger ships are making a little money on their business.—*Engineering and Mining Journal*.

#### MISSOURI.

The Central Lead Company, of St. Louis, has increased its capital from \$400,000 to \$1,000,000. C. S. Rogers, the secretary, has stated that the proceeds of the sale of the additional stock had been devoted to the purchase of additional land, of which the Central now has 1,600 acres. Its capacity at present is 375 pigs a day. The officers are: Arthur Thacher, president; F. H. Ludington, vice-president; C. S. Rogers, secretary and treasurer. The assets are placed at \$1,073,213; the liabilities, \$67,128.

The Desloge Consolidated Lead Company, of St. Louis, has increased its stock from \$200,000 to \$1,000,000. It is stated that the increase mainly represents money already spent in improving the property. The stock is held by ten persons, and there are but five directors. They own about 2,300 acres of land, and have spent \$500,000 in improvements of various kinds. It is also stated that money represented by this new stock will be placed in the treasury and used in the further development of the property, for additions to the holdings of land and for improvements. The company's last statement shows assets of \$1,000,000, of liabilities of \$29,612. Its officers are: President, Louis Fusz; vice-president and treasurer, Firman Desloge, and secretary, John F. Valle.

#### MONTANA.

There are a few men employed at the Yellowstone mine at Castle. In the immediate future a number of men will be put to work on the mine.

The surface indications of the Home Stake mine at Castle are good. It will take digging and shoveling to tell how the mine is going pan out.

It is rumored at Castle that James Knight has struck a good body of ore on the Uncle Sam mine. The specimens of ore from the new discovery on the mine look good.

Barney Tierney, the owner of the Katie mine at Castle, Meagher County, has associated with himself, on a six months lease, Billy Connor, who is a good miner. This property is looking promising, and is being worked in the shoot of ore recently opened up in the tunnel. Mr. Tierney showed some good specimens of ore from his favorite mine.—*Helena Independent*.

The new No. 4 tunnel, at the East Pacific, near Winston, Jefferson County, is now in over 800 feet, it is said, with a long distance to run before encountering the ore body it is headed for. Four teams of fours are now employed hauling ore from the E. P.

The Stray Horse tunnel, at Winston, is now in nearly 300 feet, with the ground fav-

orable to rapid progress. It has already passed through one streak of ore, to which the management has as yet paid no attention, but is driving ahead for the main lead.

#### NEVADA.

The Ione Gold Mining Company's group of mines, near Ione, Nye County, Nevada, have been sold to the Nevada Mining Company for \$200,000.

The mining realty of the Dexter Gold Mining and Milling Co. consists of about sixty acres patented, besides mill sites and other surface rights. This is a gold property of undoubted worth. Some of the ore is of sensational richness, though the vast bulk is now smelting low grade, carrying \$5 to \$15 per ton. An electric power transmission plant, utilizing water for source of power, was put in last year, besides a 40-stamp mill. The power generated fell short of requirements and an additional water supply is just secured. Tailings from stamp mill, after passing over plates, are cyanided and this double system of winning the gold does clean work.

#### NEW MEXICO.

Output of Hillsboro gold mines for the week ending Thursday, June 30th, 1898, as reported for *The Advocate*:

	Tons
Wicks.....	15
K. K. ....	10
Richmond..	15
Snake Group.....	50
Opportunity.....	15
Sherman.....	5
Cincinnati.....	10
Tripp.....	25
Rex (silver-lead).....	5
Total.....	150

Total output since Jan. 1, 1898.—3,880.

A meeting of the stockholders of the Montezuma Gold Mining and Placer company was held in Scharnagel hall, Kansas City, Mo., on June 20th. A. H. Glasner was elected president and treasurer, A. Komeiser vice president, and Chas. J. Dold secretary and manager. The following gentlemen, including the above officers, were made directors: Grant Blake, Joe Bahr, John A. Gysin and G. J. Kammerer. Mr. Dold is expected at Elizabethtown in a few days, and work will probably be resumed immediately upon his return.—*Elizabethtown Miner*.

#### OREGON.

##### Lane County Mines.

Lane County's mining industry is not behind the times; in fact, more interest is now being taken, more money expended, and more time devoted to the development of mining claims than ever before. Through a private letter from E. B. Hawley, it learned that everything is on a boom in Bohemia. Extra forces of hands are employed in tunneling and blasting. To meet the demand it has been necessary to increase the wood and coal crews.

Robert McMurphy and brother, of Eugene, who have made two trips to the mines this summer, have purchased the Eureka claim,

together with an adjoining claim and a fractional part of a third claim. Very rich ores are being uncovered every day, and the great value of these mines is becoming more apparent constantly. The development of these mines means added wealth to Lane County, and will be watched with much interest by every citizen.

Edward Geiser, who is in Baker City, last week received a message from the Bonanza mine, conveying the pleasing information that on Friday evening the miners at work in the face of the 1800-foot crosscut tunnel broke through the casing and uncovered another big ledge. When the casing broke, the rush of water was so great as to fill the tunnel to a depth of three or four feet. The miners were forced to wade waist deep or more to reach dry land.

The Shorty-Hope mines, near Ashland, have installed their new machinery, and it is in fine working order, and running night and day. The owners are greatly pleased with results.

The Oregon Placer Mining Company, of Union, with J. H. Pomeroy, T. H. Crawford and John L. Austin as incorporators, have filed articles of incorporation.

## SOUTH DAKOTA.

The Homestake Company, on the 25th of this month, will pay to the stockholders the 243rd consecutive monthly dividend of 50 cents a share.

The machinery for the hoist at the shaft on the Detroit and Deadwood Mining Company's property in Two-Bit, arrived from Chicago on the 16th and is being installed.

F. Pozansky and others, who own a group of claims one mile north of Pactola, recently encountered a body of free milling ore that gives excellent results in gold by pan tests.

R. C. McShane is engaged placing a pump and boiler at the shaft on the Pittsburg, in the Yellow Creek district, where work will soon begin, exploring the quartzite for the ore shoots.

A rich discovery of copper ore was reported to have been recently developed near the city limits of Deadwood. The ore is an altered sandstone matrix, impregnated by small particles of metallic copper.—*Black Hill Mining Review.*

## UTAH.

Captain J. R. De La Mar, of the De La Mar mines, has been in Mercur lately, the first visit for a year. The mammoth cyaniding plant, he states is achieving thoroughly satisfactory results, all things considered. The mechanical drawbacks are remedied, save the handling of the ore from the roaster. This is being righted, and 450 tons per diem are treated. The captain will not be content until 800 to 1000 tons daily are handled, and the required enlargement will be made immediately.

At Centennial Eureka, near Eureka, Juab County, a night shift of 40 men was put on last week, making 100 all told. With the recent uncovering of considerable ore of better grade than ordinary, the inference is a larger production soon.

The articles of incorporation of the Joe Bowers Mining Company were filed with the Secretary of State June 11th. Capitalization, \$400,000; share, \$1; with 100,000 set apart

for treasury needs; stock assessable. Principal office Salt Lake City; annual meeting first Monday in April. Officers and directors: James A. Brown, president; J. H. Stallings, vice-president; W. F. Smith, secretary-treasurer; John T. Hodson, John Hupfer. Realty consists of Joe Bowers No. 2, Hard Tack and Johnston claims, in the Silver City portion of Tintic. There is a 200-foot shaft with considerable drifting and several cars of ore have been shipped. A steam hoist is to be installed.

In Silver King, at Park City, a crosscut through the ledge from 1,100 level shows an ore width of 150 feet between containing walls. It is said the reserves blocked out assure the continuance of dividends at present rate for five years.

## WASHINGTON.

### Stevens County Mines.

Considerable work has been done on the Union mine lately and the property is showing up in fine shape. It is situated near the Conquest, not far from Marshall lake, and is owned by J. W. Ryan and Arnold Reinhardt.

Messrs. T. F. Meagher and Austin Miers of Ellensburg have purchased four claims in Sheridan camp from Dr. S. H. Manley, J. L. Hadley and Andrew Johnson. The claims are called the Superior No. 1, No. 2, No. 3 and No. 4. The sum paid for them was \$10,000. The group adjoins the Polar Star group upon which as much if not more work has been done than on any claim of the camp, and which is considered good property. It is the intention of the purchasers to do considerable development work upon the Superior group this summer. Mr. Miers is a leading attorney of Ellensburg, and Mr. Meagher is heavily interested in the Swauk placer mining district.

The Irene and U. S. claims in Bodie camp, have been bonded by Vaughn and Brennan for \$10,000 to St. Paul people, who intend going to work at once. The Lazetta claim owned by Herman DeWitt and Fred Muhs, is also being developed.

Free gold has been struck in the Polar Star in Sheridan camp.—*Spokane Miner and Electrician.*

## FOREIGN MINING NEWS

### BRITISH COLUMBIA.

At a meeting of the stockholders of the Ashcroft Gold Mining Company, held at the company's office in Ashcroft, and attended by nearly all of the stockholders in person or by proxy, it was decided to increase the capital stock of the company to \$50,000, and as soon as arrangements could be concluded, to begin the construction of a flume and ditch to add to the water supply. The showing, so far this season, for the limited amount of ground handled, is regarded as good.

The British Columbia Gold Fields Company of Toronto has recently placed an extensive order with the Jenckes Machine Company for a ten-stamp battery complete with two vanners, two ore feeders, grizzly, Blake-Marsden crusher, and all the various apparatus making up a complete modern milling plant. The outfit is to be delivered at Nelson, B. C.

The British Columbia Copper Company, Anaconda, B. C., have just contracted with the James Copper Manufacturing Company, Limited, Montreal, for the installation of an Ingersoll Sergeant ten-drill compressor plant, complete with ten drills, battery of boilers, Lidgerwood hoisting engines, pumps, heaters, and all necessary equipment to make the plant complete.—*B. C. Mining Critic.*

## LOWER CALIFORNIA.

It is learned from Mr. Charles Bennett that the steam pump is now in position at the Valldares placers, and they soon expect to be scraping the bedrock of the creek. The pump is a centrifugal machine and has a capacity of from 50,000 to 60,000 gallons of water per hour. Steam is furnished from a twenty-five H.-P. boiler, and the water will be raised anywhere between fifteen and thirty feet, the depth of the gravel to bedrock not having yet been determined. There have been many attempts to work these placers, which are known to be rich, but all have failed signally from the fact that very considerable water at all times seeps through the sands of the Valldares and interfered to such an extent that mining was impossible. To overcome this difficulty it has been necessary to build a road sixty miles over a rough and broken country to the coast and move in heavy machinery. This accomplished, however, there is now little doubt as to results.

## MEXICO.

The official report of the Batopilas mine, Alexander Shepherd's bonanza property, for the year 1896-7, has been published. The total workings for these years was \$23,700 feet, and ore to the amount of \$43,807,612 pounds was taken out, valued at \$907,626 (Mex.), of which \$690,595 was in silver bars. The expenses were \$1,360,522, showing a deficit of \$452,896. The debt of the company is \$681,347 (Mex.) and \$369,997 gold, unfunded, and 6 per cent bonds for \$459,700. The Porfirio Diaz tunnel is now in 6,069 feet, and advancing at the rate of 100 feet a month. In 550 feet more it will cut the Todos Santos vein and the Roncesvalles 360 feet further on, which will reduce the cost of working these veins. The company is now doing its own casting at a great saving of expense, and proposes to increase its milling facilities.

The Anita Mining and Milling Company, a new corporation, is a new organization, composed mostly of men from Cucamonga and Ontario, San Bernardino County, California. The company possesses a capital stock of \$480,000, divided into ten shares, \$384,000 being contributed by the directors, as follows: F. E. Trask, \$132,000; I. S. Miller, \$20,000; H. T. Hughes, \$40,000; S. G. Vandegrift, \$20,000; R. C. P. Smith, \$132,000; C. W. Allen, Cucamonga, \$20,000. The mines are located in the Atlas district, Sonora, Mexico.—*Transcript.*

### Copper Mining on Lake Superior.

(Concluded from our last issue.)

The head current of water coming from the stamp heads, in which float the light material and fine dirt, is turned from the main launder into lateral ducts, which convey it to the large slime tables over whose conical-shaped, slow-moving surface it is made to pass.

The stamp mills and copper crushing machinery used at the copper mines on Lake Superior have reached a high state of perfection. The advance which has been made in this region in this department of mining work, from the crude iron shod wooden stamps and hand buddles of an early day to the stupendous structures with their intricate machinery, that now successfully perform the work, is certainly wonderful. The simple mill wherein could only be stamped and manipulated a few tons of rock per day, and at a cost too great for profit, has given place to those with a capacity of 5,000 and 6,000 tons per day, wherein the manipulation is attended with but a tithe of the cost and difficulty which were inseparable from the earlier attempts. The work has been so perfected that 33 cents would cover the entire cost of treating a ton of rock in the stamp mill.

Perfect and systematic as the mechanical manipulations in copper mining have become, there is yet a waste of copper in the tailings. This waste varies from one-fourth to one-half per cent, and this is in the aggregate product of the Calumet and Hecla mill, which stamps 4,000 tons of rock per day, average, represents a very important value at the end of each year.

The pumping engine, Michigan, the largest in the copper country, has a capacity of 60,000,000 gallons every twenty-four hours. The engine is of the triple-expansion pattern, has steam cylinders 18, 28½ and 18 inches diameter by 90 inches stroke, and is capable of lifting 1,400 gallons at every revolution. Its height from base to summit is 56 feet. The diameter of the fly wheel is 25 feet and its weight 30 tons. The foundation upon which this engine rests contains 912,000 bricks, 3,000 barrels of Portland cement and 300 tons of granite cap stones.

The big sand wheels are 50 feet in diameter, and have a lifting capacity of 30,000,000 gallons of water each and 3,000 tons of sand every twenty-four hours. The sand from the mill carried out into the lake by a system of launders has made hundreds of acres of artificial peninsulas, while the lake itself, once a beautiful blue, is now dyed to a deep pink from the effects of the red conglomerate. The yield of refined copper at the Calumet and Hecla mine to the cubic fathoms of ground broken, is 850 pounds; yield of mineral per fathom of ground broken, 1,130 pounds; yield of refined copper per ton of rock stamped, 52.78 pounds; percentage of copper in stamp rock, 75 pounds average.

During 1897 the Calumet and Hecla mill treated on an average 4,100 tons of rock per day, which yielded an average of 5,850 tons mineral per month.

A conception cannot easily be formed of the tremendous displacement that is going on underground in this mine. As J. H. Wilson, of the *Native Copper Times*, the most reliable mining paper on Lake Superior puts it, "Imagine a great trench, two-miles long, twenty feet wide and one hundred feet deep, and you may form some idea of the openings which the annual product necessitates."

Many persons will wonder how long the mine can last with such a great production. But when they are told that the mine is at present opened up thirteen years in advance of the stopping, they will cease to wonder. Besides this they have territory as yet untouched which insures thirty years more at the present rate of production.

The Red Jacket shaft of the Calumet and Hecla, and which went into commission last April, is the deepest in all the world. Im-

agine a great hole, measuring 14x22½ feet inside the timbers, penetrating into the bowels of the earth, straight as an arrow, for 5,000 feet. This shaft which has a capacity of four times that of the old shafts, is constructed after the following manner:

The first crosscut which connects the shaft is at a depth of 2,106 feet, has a length of 1,553 feet, and intersects No. 4 shaft at the 36 level. The second crosscut, at a depth of 2,290 feet, intersects the "lode" at the 39th level, while the third crosscut intersects it again at the 42nd level, at a depth of 2,463 feet. From the latter intersection the levels range 90 feet apart, and afford access to all parts of the mine. Each level has three openings at the shaft proper, which is the main entrance, while on the northwest and south sides, the openings are made with a curve until they reach the main drift, at a distance of 175 feet from the shaft proper.

The largest number of feet sunk in any one month was 69½ and in one week 17½, and the least number in one week was 12 feet. The cost of sinking averaged \$25.70 per foot.

Calumet and Hecla Surface Workings: Looking over the surface workings of this great mine, one is impressed with the idea that he is inspecting a literal exposition of machinery. No other mining company can begin to cope with it in the amount of horse power employed. The great Superior engine, which operates the drums at the Calumet branch, develops 4,500 horse power. The shaft of this engine is of steel, 16 inches in diameter, and the balance wheels, of which there are two, are thirty-three feet in diameter and weigh 40 tons each. The engine is run to a speed of 55 revolutions per minute.

The twin engines, Minong and Messard, of 3,000 horse power each; the four triple-expansion engines of the Red Jacket shaft, having a combined capacity of 8,000 horse power; the South Hecla engines of 5,000 horse power, and the grand array of other machinery, including electrical and hydraulic, makes the visitor wonder if so much grand mechanism is necessary. The surface workings cover an area of two and one-half miles, which is completely dotted with imposing structures, behind whose four walls grind day and night the ponderous machinery, and above which tower the huge smoke stacks, built of solid masonry, some of them lifting their heads 255 feet into space.

#### State Maps and Register.

The State Mining Bureau has in present process of preparation maps of several of the mining counties, designed to show the location of the various mines and mineral deposits therein to accompany registers of the same designating the names character, etc., the first supplementing the other. About seventeen are now being compiled, the intention being to ultimately so district the entire State. The registers are prepared in tabulated form. That of Nevada Co. is about complete and gives a fair idea of the scope and character of the work. There are 357 quartz drift and hydraulic mines enumerated and described.

The list begins with the "Ajax, Grass Valley, Sections 2-11, Township 15, Range 18, Map No. 148, Patented, 2200 feet elevation, 1 vein 12 inches wide, strike north and south, dip west, character of ore gold quartz, with galena and sulphide, hanging wall granodiorite, foot wall granodiorite, etc."

Descriptions are full and exact, as No. 3 on the list:

"Allison Ranch, Grass Valley, Section 2, Township 15, Range 8, Map No. 146, Patent-

ed, 2140 feet elevation, 1 vein, width 6 feet 3 inches, strike north and south, dip 41° west, character of ore gold quartz with galena and sulphurets, hanging wall granodiorite, foot wall granodiorite, shaft incline 800, 730, tunnel drifts 5000 feet, greatest depth below outcrop 400 feet, mill power water, number of men employed 54, owners' name Allison Ranch Con. Mg. Co., residence San Francisco, superintendent's name Chas. E. Uren, residence Grass Valley."

#### SOME REMARKS ON THE CYANIDE PROCESS.\*

*Mr. Chairman and Members of the Mining Congress:*

When your Honorable Committee invited me to read a paper on the Cyanide Process, I at first declined, knowing that there would be present amongst the members of this Congress gentlemen able to read a much more satisfactory paper on Cyaniding than I am in position to do. Considering that the last three years I have not been actively engaged in a Cyanide Plant, I feared that owing to this lack of practical experience, I could not communicate to you the latest improvements made on this process. However, upon a second request from your Honorable Committee to read a paper I consented, not with the intention of taking up your valuable time and attention by reading a long paper on the theory and history of the Cyanide Process, which are only too well known to most of you, but to place before this meeting a few facts, particularly from my own experience, which may perhaps with some of you be a valuable contribution and therefore add to the further development of the Cyanide Process in this country.

I do not need to state that for every ore so to say a special process must be worked out, based on a scientific investigation of the material to be treated.

The first question to present itself is: "Which Gold Ores can be successfully treated by the Cyanide Process? So-called coarse gold is not acted upon by Cyanide, or at least only so very slowly that it is not practical to apply the Cyanide process to ores which contain the gold in coarse condition. Experiments and experience gained have shown that the precious metal can be successfully extracted by means of Cyanide from low grade ores, in which the gold occurs in a very finely divided free or metallic state, and I believe I am safe to state that in nearly all gold-bearing ores the gold exists in a very free and not in a combined state. By this, however, I do not want to say that every low grade ore in which the gold occurs in a very finely divided state can be treated by Cyanide with success, but with very few exceptions ores of this nature can be treated. The selective action of a dilute Cyanide solution on gold ores, in preference to the sulphides of base metals with which they may be associated, is so wonderful that, from a chemical view, we may say that it is possible to extract the gold from all low grade ores by means of Cyanide, with the exception of ores containing Copper, Zinc and Antimony combinations. In these cases the treatment becomes difficult, if not impossible. It is rather unfortunate that Cyanide has this selective action, more or less, on ores containing the above mentioned metals. If this was not the case, we could say that this excellent process

\* A paper read before the International Mining Congress, at Salt Lake City, Utah, by Louis Fide, chief chemist and director of the Roessler and Hasselacher Chemical Co., of New York, Cyanide Works, Perth Amboy, N. J.

with which the names of Messrs. McArthur and Forrest are so closely connected, and to which gentlemen the whole Mining Industry of the world is indebted for having first introduced this process, could, from a chemical standpoint, be applied successfully to all classes of low grade ores.

In many cases, however, in which the Cyanide process proved to be a so-called failure, this failure was by no means due to the chemical action of the Cyanide on the ores, but more to the preliminary treatment of the ore. Before beginning with experiments in order to prove whether an ore could be successfully treated by Cyanide, it is absolutely necessary to become thoroughly acquainted with the nature of the ore, as to its chemical qualities as well as to its general structure. In every case a quantitative chemical analysis of the ore should be made, in order to find out if the ore is an oxidize, (so called free-milling ore) or if it belongs to the class of pyrites. The percentage of other metals, and in what combination they are present, should be known. Further, it is of the greatest importance to know the amounts of Silica, Alumina, Magnesia, Lime, etc.

According to the result of this analysis, it is for the Metallurgist to decide whether it is advisable to subject the ore to a number of practical experiments, or whether the ore is unfit to be treated by cyanide at all. If, in the Metallurgist's opinion it is worth while to make further experiments in order to become better acquainted with the nature of the ore, the first, and in my opinion most important question to decide is, which is the most practical way for crushing the ore, that is to say, what crushing apparatus or machinery is the most favorable use? To what size should the ore be best reduced to for leaching purposes?

This question of dry or wet crushing has to be ventilated. The answer to this depends altogether on the nature of the ore. On the one hand dry crushing is the proper way and on the other hand it is detrimental and wet crushing preferable.

On first thought one is inclined to believe that the finer the ore is crushed the better it is for leaching purposes; but this is very often a wrong conclusion. It may be all right for very hard, silicious ore, but not for an ore containing for instance Alumina and Magnesia, which are apt to form slimes when coming in contact with the Cyanide solution and these slimes render the ore impenetrable to any solution, and therefore make good extraction impossible.

(TO BE CONTINUED.)

### The Installation of a Notable Water-Power Plant.

The Pelton Water Wheel Company of San Francisco, have under construction a power plant for the British Columbia Railway Co., the most notable installation of the kind in the Northwest. The power station is located at Gold Stream, some 12 miles from Victoria, and the water supply is furnished from the Esquimalt Water Works system.

The plant consists of two 38" D. N. Pelton wheels, 600 h. p. each, running at 600 revs. under 500 ft. head. The wheels are direct connected to Canadian General Electric generators by insulated couplings. The power thus generated is to be transmitted to Victoria at a pressure of 10,000 volts and then used for running the railway system of that city, lighting and general power purposes.

## MINING LAW.

All questions and disputes concerning mining law, if addressed to the JOURNAL, will be answered under this heading by F. M. JEFFERY, mining attorney of Los Angeles, Cal. The latest important court decisions on mining cases will also be given.

### Important Decisions.

An important decision was rendered during the week from the courts in Denver in the case of the Matoa Gold Mining Company vs. the Chicago and C. C. Tunnel Company and the Mutual Benefit Leasing Company, all of Cripple Creek, Colo. The case has been under advisement for some days.

The plaintiff asked for an injunction to prevent the lessees from mining and shipping any ore from the tunnel as the ore was being taken from a vein which had its apex in the Gold Pass No. 1 claim belonging to the Matoa Company. It was alleged that ore to the value of \$110,000 had been taken from lessees operating in the tunnel.

The court granted the injunction asked and barred the lessees or any interested directly or indirectly in the tunnel company from working in the property. The plaintiffs, however, were given permission to enter the tunnel and survey the territory.

In an exhaustive opinion, Judge Campbell, of San Bernardino, California, has decided that the California Act, of March 27, 1897, prescribing the manner in which notices and locations are to be recorded, is constitutional; by this decision, all fees for recording will go into the county treasury and not become a perquisite of the office.

### Questions and Answers.

(Q.) The president of a mining company gave the note of the company for \$500, signed by himself as president of the corporation, without consulting the board of directors. Will this bind the corporation—the note was given in the ordinary course of business?

(A.) Your question gives so few details that it is hard to answer. If you mean that the name of the company was not signed to the note, but the name of the president alone, and that he added to his signature—president of the mining company, I will say that the corporation is not bound, as it is necessary to bind the company that the name of the company should be signed to the instrument. The courts of the different states have held diametrically opposite opinions of the powers of the president of a corporation. If the corporation received full consideration for the note, and it was signed for the company by some authorized agent, very slight acts on the part of the corporation will be held as a ratification of his act, and the corporation will be bound.

(Q.) Two miners are now occupying one mining claim, but neither one has taken any steps to comply with the law further than to work on the claim; one has a shaft down 20 feet, and the other is working in a tunnel. Who has the best right to the claim?

(A.) Both are trespassers on the public domain, and would have no right as against one who would at this time enter upon the land and comply with the law. As between themselves, both having a possessory title, the one who commenced work and took possession first will have the better title.

(Q.) Is it necessary to live on a mining claim, or to be in actual possession of it to hold it?

(A.) No: You are probably thinking of agricultural land. A constructive possession of a mining claim is sufficient.

(Q.) Are the stockholders of a mining company liable for the debts of the company?

(A.) Most states have statutes making stockholders liable for a greater or less

amount. Some states, among which is Colorado, have no personal liability of stockholders whatever; but if a Colorado corporation comes into this state to do business, where we have a personal stockholders' liability, the stockholders are liable for debts contracted in this state.

(Q.) Three prospectors have for a year past been engaged in the business of working a claim, all having an interest in the claim. One of the prospectors, without the knowledge of the others, or without obtaining their consent, contracted with another person to sink a shaft 50 feet deeper on the claim. Will this contract by one bind and hold good against the other prospectors who knew nothing about it, so that the claim can be taken by the party who did the work?

(A.) This is a mining co-partnership, and each member of a mining co-partnership is the agent for all the others, he can therefore bind the partnership. The creditor of the partnership can either put a lien on the property or sue and attach, in either case, he can take the property for the debt.

## PERSONAL NEWS ITEMS

J. E. McIVER, of Poway, San Diego county, Calif., was a caller at the JOURNAL office last week. Mr. McIVER has located a tin mine on his place, near Poway, and will develop it when he obtains the necessary wherewith.

A. J. KING arrived at El Paso, Texas, last month from his mines in the Sierra Madre, Sonora, Mex.

DR. F. R. CARPENTER, of Deadwood, South Dakota, is expected home from the East during the week.

J. BIGLER, of San Bernardino, has gone east to procure a cyanide plant, to run in connection with the stamp mill at Victor.

C. B. FLYNN, the northern Mexico mining man, left Monterey, Nuevo Leon, Mexico, last month for England, on business connected with his mining properties.

R. T. MCINTIRE, of Council Bluffs, Iowa, one of the stockholders in the Big Four Mining Company, was visiting in the Black Hills during the week.

MESSRS. A. R. MEYER, president, C. E. FINNEY, manager, commercial department, and L. P. FEUSTMAN, manager, Mexican department, of the Kansas City Consolidated Smelting and Refining Company, made a tour of Mexico last month. They were accompanied by H. R. SIMPSON, manager of the El Paso smelter and W. B. CLARKE of Kansas City.

H. B. VERCOE, M. E. M. I. M. M., general manager and shareholder of the Riverside Gold Mining Company, (Limited); Perris, Riverside County, Cal., and part owner of the Copper King, Letcher, Fresno County, Cal., will sail for London, England, on the 23rd, and expects to be absent three months, leaving his son, H. Grafton Vercoe, in full charge of the Copper King mine, and H. E. Pedley, M. E. and C. E., in charge of the Riverside gold mines.

J. E. SUTMAN & Co., manufacturers of a new mortar, that is a crusher and pulverizer combined, have removed from 103 E. 14th st. to 74 Cortlandt st., New York, where they are prepared to fill all orders.

A company, headed by F. HORTON, of Cleburne, Texas, will develop placer properties near Pihuamo, Jalisco, Mexico, operating extensively with hydraulic machinery.

The attention of the manufacturers of Dry Concentrators or Washers is called to the fact that we have an inquiry for such machines. The address of the party requiring them can be had at this office.

H. GREFFON VERCOE returned to the Copper King mine, at Letcher, Fresno county, Calif., last week, after spending three months at the stamp mill of the Riverside Gold mines at Perris, Riverside county, Calif.

CARL KOELLE, superintendent of the Consolidated Kansas City Smelting and Refining Company's plant at Argentine, Kansas, left for Europe last month, to study European ideas and methods of smelting ores.

MENAMARA & Co. have recently opened an office, at 129 South Broadway, Los Angeles, Calif., for the sale of mines and minerals, assaying, etc. Mr. Menamara has had a great amount of practical experience on the Pacific Coast, which enables him to be of value to those wanting to know anything about mines or mining.



Prices are per 100 lbs. in New York and vicinity in lots of 25 carboys or over. Quotations are as follows: Acetic acid, commercial No. 8 \$1.40 @ \$1.55; redistilled, 28 per cent., \$2.00 @ \$2.15; Muriatic acid, 18 per cent., 1.10 @ \$1.75; 20° \$1.20 @ \$1.87½; 22°, \$1.35 @ \$2.25, according to make and quantity. Nitric acid, 36°, \$3.50 @ \$4.75; 38°, \$3.75 @ \$4.62½; 40° \$4.00 @ \$4.87½; 42°, \$4.62½ @ \$5.25. Oxalic acid, \$6.50 @ \$7.00. Mixed acids, according to mixture. Sulphuric acid, 66 per cent., \$1.10 @ \$1.75. Chamber acid, 50° \$11.50 @ \$12 per ton at factory. Blue Vitriol, \$3.50 @ \$3.62½ according to grade and order.

## BRIMSTONE.

Demand continues moderate. No arrivals are noted, and prices are: Futures lower and the quotations for cargoes to arrive is \$22.50 per ton and for best unmix second with \$20.50 named for thirds.

## MURIATE OF POTASH.

We quote per 100 lbs. on basis of 80 per cent., as follows: New York and Boston, \$1.78 for 80@85 per cent., and \$1.81c. for 95 per cent.; Norfolk and Philadelphia, \$1.76½ for 80@85 per cent., and \$1.79½ for 95 per cent.; Charleston, Savannah, Wilmington, N. C. and New Orleans, \$1.78½ for 80@85 per cent., and \$1.81½ for 95 per cent. All for lots of 50 tons and upward.

## KALINIT.

Invoice weights as taken at port of shipment per ton of 2,240 lbs. testing 12.4 per cent. actual potash, equivalent to 23 per cent. sulphate of potash, \$8.55 @ \$8.80 for New York and Boston; \$8.90 @ \$9.15 for Norfolk, and Philadelphia; and \$9.05 @ \$9.30 for Charleston. Sa-

vannah, Wilmington, N. C., and New Orleans.

## NITRATE OF SODA.

Prices continue a little uncertain, with rather a downward tendency. The quotations are unchanged at \$1.60 @ \$1.70 per 100 lbs. for spot, \$1.50 for July arrivals, \$1.60 for August, \$1.55 @ \$1.57½ for September, and \$1.52½ @ \$1.55 for October-December, inclusive.

## FINANCIAL NOTES.

The statement of the United States Treasury, on Thursday, July 7th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

	July 7	Changes.
Gold.....	\$169,680,213	1. \$3,207,075
Silver.....	10,596,352	D. 307,748
Legal Tenders.....	35,620,397	L. 2,255,651
Treasury Notes, etc.....	2,589,564	L. 282,432
Totals.....	\$219,828,659	L. \$5,437,420

Treasury deposits with national banks amounted to \$46,218,286, a decrease of \$124,501 during this week.

## Average Monthly Prices of Silver.

In New York per ounce Troy, from January 1st, 1898, and for the years 1897 and 1896:

Month	1898	1897	1896
January.....	56.77	64.79	67.13
February.....	56.07	64.67	67.67
March.....	54.90	63.06	68.40
April.....	56.02	61.85	67.92
May.....	56.08	60.42	67.78
June.....	58.61	60.10	68.69
July.....	59.61	68.75	67.75
August.....	54.19	67.34	66.08
September.....	55.24	66.05	64.86
October.....	57.01	64.86	65.24
November.....	58.01	65.24	67.75
December.....	59.79	67.75	

## Gold and Silver Exports and Imports.

At all United States ports, May, 1898, and years from January 1st, 1898 and 1897:

	Coin and Bullion Exp.	Imp.	In Ores Exp.	Imp.
Gold—				
May.....	\$ 109,157	\$13,119,383	\$.....	\$199,517
1898.....	5,673,031	87,089,977	72,441	2,493,204
1897.....	17,377,326	3,066,605	93,008	1,758,993
Silver—				
May.....	4,184,432	488,568	.....	1,080,881
1898.....	20,236,278	2,402,361	112,699	8,047,223
1897.....	22,808,037	3,465,067	259,150	8,559,708

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Specie shipments by water from San Francisco for the five months ending May 31st were as follows:

	Gold	Silver	Totals
Hong Kong.....	\$19,448	\$2,102,106	\$2,121,554
Shanghai.....	.....	166,578	166,578
India.....	.....	415,900	415,900
Honolulu.....	.....	27,000	197,000
Tahiti.....	2,411	.....	2,411
Central America.....	22,425	82,740	105,165
Total foreign.....	\$214,284	\$2,824,324	\$3,038,608
New York.....	.....	92,326	15,959,081
Totals.....	\$16,081,039	\$2,916,650	\$18,997,689
Totals 1897.....	14,233,397	4,409,355	18,642,752

The preliminary statement of the Bureau of Statistics of the Treasury Department shows that merchandise exports from the United States continued heavy in May, reaching a total of \$110,239,206, or \$32,367,930 more than in May, 1897. The imports for the month were \$53,258,847. For the eleven months of the fiscal year from July 1st to May 31st, the statement is as follows:

	1897.	1898.
Exports.....	\$77,800,522	\$1,135,485,618
Imports.....	679,547,391	563,596,581
Excess, exports.....	\$98,253,131	\$571,889,037
Add excess of exports, silver.....	.....	22,054,641
Total.....	.....	\$593,943,678
Deduct excess of imports, gold.....	.....	102,026,949
Net apparent balance.....	.....	\$491,916,729

## POSITIONS WANTED

Advertisements of this class containing not more than five lines will be inserted for not exceeding three months in any year, free of charge, to all paid-up annual subscribers. Other than above \$1.00 per month will be charged. Advertisements not accepted for less than one month.

WANTED, by a young experienced man, position as quartz mill man, one who can keep mill running. Address, A. E. CHARLESWORTH, LOCKFORD, CAL.

WANTED, by a young man, a position as Assayer, etc.; experienced, competent and has a good knowledge of all metallurgical operations. Good references. Address, T. K. JOURNAL OFFICE, STIMSON BLOCK, Los Angeles, Cal.

WANTED—Situation by Millman and Assayer; Wages reasonable; Good references. Address "H" JOURNAL OFFICE

Third Edition Revised and Enlarged.

## Prospector's Field Book and Guide

In the search for and the easy determination of ores and other useful minerals, by H. S. Osborn, 58 engravings 274 pages, by mail \$1.50. Catalogue M. Mining, Assaying, etc., sent free.

## PHILADELPHIA BOOK CO.

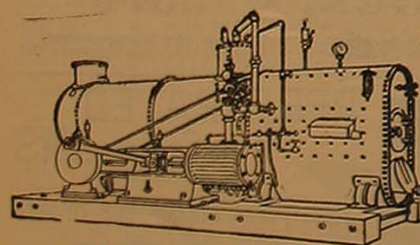
15 S. Ninth Street, Philadelphia, Pa.



## Assayers and Laboratory

Glassware and Porcelain Ware, Magnifying Glasses, Thermometers, Altitude Barometers, Compasses, and Microscopes, Wholesale and Retail. Correspondence Solicited. Prices quoted on application.

Pacific Optical Company, 245 S. Spring St., Los Angeles, Cal.



## Engines Boilers Saw Mills

Write for Catalogue and Prices. RUSSELL & CO. PORTLAND, OREGON.

## FOR SALE!

One 36"x84" Water Jacket Furnace, Boiler, Engine Blower, Rock Breaker. Scales, Shafting, Pulleys, Belting, Tools and all fittings and fixtures complete and new, built by Frazer & Chalmers; also one 16x42 Hamilton Corliss Engine; one 12x20 double Cylinder Hoisting Engine. Will be delivered f. o. b.

W. E. DAME, CERRILLO, NEW MEXICO

## ASSAYER and CHEMIST

Mark samples plainly, advise by letter of full details, with charges enclosed. Postage on ore one cent per ounce.

C. H. VOLL, SEATTLE, WASHINGTON

34 Roxwell Bldg.

## The Baker &amp; Adamson Chemical Co.

MANUFACTURERS OF

Strictly Chemically Pure Acids and Chemicals and Ashless Filter Papers

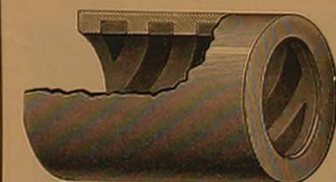
EASTON, PENNSYLVANIA

## ADOLF FRESE ENGINEERING INSTRUMENTS

Barometers, Thermometers, Field Glasses, Microscopes and Accessories. Repairing Promptly Done.

126 S. Spring St., LOS ANGELES, CAL.

## Oilless Bearings,



For

Rope Tramways, HOISTING Engines, Tackle Blocks, Cam Shafts in STAMP MILLS. A Practical BEARING that RUNS WITHOUT OIL.

The Graphite Lubricating Company

BOUND BROOK, N. J.

## Sulphuric Acid

## ASSAYERS AND CHEMISTS

## WADE &amp; WADE

Best and Oldest Establishment in Southern Cal.

115½ N. Main St., Los Angeles, Cal.

## THE JOHANNESBURG SAMPLING WORKS

Purchasers of Gold, Silver, Copper and Lead Ores and Concentrates

Cash Returns Made Within Twenty-four hours after receipt of Ore.

CHAS. R. WORGES, MANAGER,

Johannesburg, Cal.

## MINING STOCK QUOTATIONS

## BOSTON

Aetna Con	do, rights	55
Allouez	3 38	
Anacanda	16 88	
Arnold	3 88	
Ash Red	28 00	
Atlantic	17 88	
Baltic	28 00	
Bonanza	17 88	
Boston and C. C.	21 11	
Butte & Boston	24 75	
Calumet & Hecla	575 00	
Catalpa	16 50	
Centennial	24 00	
Domination Coal	169 3	
Franklin	14 75	

## NEW YORK

Alamo	03 1/2	Homestake	28 50
Alice	40	Iron Silver	30
Annetta	45	Mexican	30
Best & Belcher	60	Mollie Gibson	19
Bronswick	05	Ophir	4 50
Crown Point	65	Pharmacist	10
Con. Cal. & Va.	—	Plymouth	—
Cripple Creek Con	08 1/2	Quicksilver	3 00
Deadwood	—	Quicksilver pfd	11 00
Favorite	11 25	Sierra Nevada	—
Fortuna	04	Standard	1 60
Golden Fleece	45	Union Con	—
Gould & Curry	—	Yellow Jacket	—
Hale & Norcross	—		

## COLORADO SPRINGS STOCKS

Alamo	02	Jack Pot	03 1/2
Anacanda	52 1/2	Lexington	90
Argentum Juanita	26	Lillie	008 3/4
Bob Lee	08 1/2	Magnet R	—
Creede & C. C.	03 1/2	Marion	15
C. C. Consolidated	09	Matua	24 1/2
Des Moines	—	Mollie Gibson	74 1/2
Elkton Con	07	Moon A'c'r	12 1/2
El Paso	16	New Haven	01 1/2
Fanny R	03 1/2	Pharmacist	05
Favorite	—	Pilgrim C	99 1/2
Fidelity	—	Portland	01 1/2
Franklin	—	Pr. Albert	—
Golden Crater	—		

Golden Fleece	30	Specimen	—
Gold & Globe	—	Theresa	00 1/2
Hayden	005	Trachyte	01 1/2
Ing. Con.	08 1/2	Union Gold	02 1/2
Isabella	23 1/2	Work	—

## LOS ANGELES, CAL.

Amargosa	05	Lucky Star	6 00
Brown Lake	07 1/2	Magnet	—
East Amargosa	60	Mohawk Action	50
Empire Copper	25	Old Dominion	05
Gold Bug	1 60	Pacific Con	1 25
Grand Central	02	Rand Mt	1 25
Iron Mt.	02 1/2	Sun Dance	1 50
Laurel Mt.	02 1/2	Val Verde	09 1/2
Little Butte	15	Wedge	—

## SAN FRANCISCO

Alpha	—	Exchequer	21
Alta Con	10	Gould & Curry	1 65
Andes	09	Hale & Norcross	1 65
Belcher	23	Justice	55
Best & Belcher	27	Mexican	80
Bodie	—	Ophir	80
Bullion	10	Overman	21
Challenge	28	Potosi	10
Chollar	15	Savage	10
Confidence	85	Sierra Nevada	67
Con. Cal. & Va.	49	Union Con	11
Con New York	—	Utah	07
Crown Point	13	Yellow Jacket	03

## SALT LAKE CITY

Alice	70	Lucky Bill	—
Alta	31	Mammoth	1 85
Alliance	10	Maxfield	—
Anchor	10	Mercur	7 15
Buckeye	02	Morgan	01
Bull, Beck	5 80	Northern Light	3 25
Cent. Eureka	31 00	Ontario	—
Chloride Point	85	Overland	—
Dalton	09 1/2	Richmond Ana	—
Daly	70	Union Con	06 1/2
Daly West	3 50	Silver King	20 00
Dalton & Lark	1 25	Sioux Con	—
Dexter	04	Sunbeam	09 1/2
Eagle	04	Sunshine	24
Eureka Hill	—	Swansea	1 18
Four Aces	08 1/2	Utah	47
Galena	54	Utah Con	—
Gemini	—	Horn Silver	1 37 1/2
Geyser-Marion	6 87 1/2	Little Pittsburg	02 1/2
Grand Central	01 1/2		
Homestake	01 1/2		
Horn Silver	1 37 1/2		
Horn Silver	1 37 1/2		
Horn Silver	1 37 1/2		

## ROSSLAND, BRITISH COLUMBIA.

Alberta	05	Joie Mac	12 1/2
B. C. Gold King	07	Joie	38
Beaver	10	Junio	75
Big Three	10	Knight Templar	05
Bluebird	07	Kootenay-London	10
Bruce	10	Le Roi	8 00
Butte	01 1/2	Lilly May	18
Caledonia Con	05 1/2	Mabel	15
California	15	Mayflower	18
Camp Bird	05	Monta	18
Celtic Queen	05	Monte Christo	18 1/2
Centre Star	—	Morning Star	08
Colonia	24	Mugwump	03
Commander	18	Nest Egg	05
Deer Park	12 1/2	Northern Belle	10
Della Colla	02	Novelty	09
Delaware	12	O. K.	10
Eastern Star	20	Palo Alto	05
Enterprise	20	Phoenia	13 1/2
Eric	03 1/2	Poorman	10
Eureka Con	05 1/2	R. E. Lee	15
Evening Star	08 1/2	Red Eagle	06
Georgia	10 1/2	Red Mount View	10
Golden Drip	15	Red Point	05
Good Hope	03 1/2	Rosland H'mest'ke	20
Grand Price	03 1/2	Rosland, Red Mt.	20
Great Western	08	St. Elmo	12 1/2
Hattie Brown	—	Silver Bell	04
Helen	04	Silvermine	10
High Ore	04 1/2	So Cross & W. Con	12
Imperial	10	Virginia	06
Iron Horse	20	War Eagle Con	1 00
Iron Mask	38	West Le Roi	21
I. X. L.	10	White Bear	11

## DENVER STOCK REPORT.

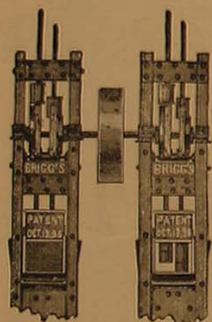
Aetna	001 1/2	Keystone	04
Anacanda	51	Lillie	90
Arcadia	00 1/2	Moon A	78
Argentum Junia	28	Mt. Rosa	12 1/2
Banner	07	Old Gold	01 1/2
Bob Lee	09 1/2	Peoples	01 1/2
C. C. Con	08 1/2	Pilgrim C	02 1/2
Elkton	90 1/2	Pine Creek	06 1/2
El Paso G	06 1/2	Portland	—
Enterprise	07 1/2	Prince Albert	01 1/2
Garfield Grouse	05	Republic	02 1/2
Geo. Washington	003 1/2	Sacramento	02 1/2
Golden Eagle	34	Specimen	03
Gold Coin	98	Tamarack	06 1/2
Gilpin & C. C.	08 1/2	Union Gold	10 1/2
Gilpin Four	004 1/2	Virginia M	03 1/2

Iron Clad	02 1/2	Wheel of Fortune	002 1/2
Isabella	23 1/2	Work	02 1/2
Jack Pot	03 1/2		

## MEXICO

Name of Company	State	Price
Alamita	Hidalgo	5
Amistad y Concordia	"	24
Angustias	Guanajuato	710
Arevalo y Anexas	Hidalgo	240
Asturiana y Anexas	Zacatecas	250
Barradon y Cabras	Durango	300
Bartolome de Medina	Hidalgo	100
Cabezon y An	Zacatecas	30
Candelaria de Pinos	"	160
Candelaria de Panuco	"	20
Candelaria de Chalch	"	20
Capusaya	Durango	120
Carmen	Hidalgo	350
Castellana y San Ram	Tepic	80
Cerro Colorado	Chihuahua	10
Cinco Senores y An	Guanajuato	650
Concepcion y Anexas	S. Luis Potosi	250
El Oro	Guanajuato	40
Esparanza y An	Mexico	1 300
Guadalupe	Guanajuato	180
Huautla	Santa Ana	100
Luz de Borda	Michoacan	200
Luz de Maravillas	Hidalgo	150
Pabellon	Zacatecas	150
Palma	"	5
Purissima de los Com	Hidalgo	900
Real del Monte	"	3
Refugio y Va	Durango	60
Restauradora	"	50
Rosario y Anexas	Hidalgo	270
San Francisco	"	100
S. Ped. Chalchihuites	"	925
San Rafael y Anexas	"	400
So. Free Stock	Hidalgo	20
San Rafael del Oro	S. Luis Potosi	730
Ste. Maria de la Paz	Durango	80
Sirena	Hidalgo	400
Soledad	"	250
Sorpresas	Guanajuato	40
Trinidad	Puebla	27
Tlaxingo	Hidalgo	280
Union	"	15
Zaragoza	"	100
Zomelahuacan (gold)	Vera Cruz	100
Zona Min de Pozos	Guanajuato	15

NOTE—The above Mexican stocks are figured on the basis of Mexican silver



## Krogh Manufacturing Company

Successor to San Francisco Tool Co.'s Machine & P'g Dept.  
MANUFACTURERS OF AND DEALERS IN

## MINING AND PUMPING MACHINERY,

COMPRISING

Briggs' 2-Stamp Tripple-Discharge Quartz Mill, of Latest Improved pattern. Rock Breakers, Ore Feeders, Concentrators, Engines and Boilers, Hoisting Rigs to be operated by Horse, Steam Power or any other motor; Ore Cars and Ore Buckets, Cornish and Jack-head Pumps, Triple-Acting Pumps, Centrifugal Sand and Gravel Pumps, Wooden Tanks and Pumps for the Cyanide Process, Pipe and Gate Valves, Link Chain Elevators for elevating and conveying all kinds of material. Estimates as to cost of machinery and its erection furnished upon application. Write for Catalogue and Prices.

OFFICE AND WORKS AT

51 Beale St. and 9 to 17 Stevenson St., San Francisco, Cal.

Chas. P. Grimwood,

Mining Engineer and Metallurgist

Laboratory, 214 Pine Street,

SAN FRANCISCO, CAL.

## Assay Office \*

LEW E. AUBURY

115 W. First St.,

Opp. Natick House Los Angeles



## BRANCH OFFICES:

1428 E St., San Diego, Cal.

\*\*\*

523 1st AVENUE, SPOKANE, WASH.

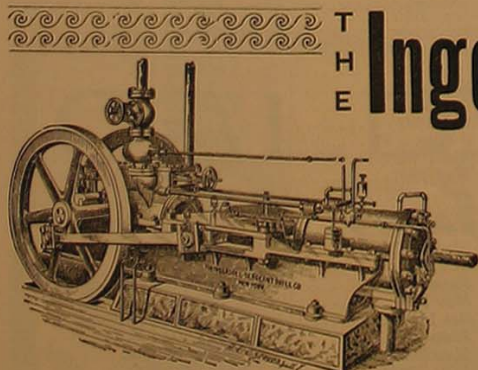
The Southern California Lumber Co., Stimson Bk., Los Angeles, Cal., Chas. Wier Manager, sell

## LUMBER

Art Wholesale Prices

Mining Timbers a Specialty

Write for Prices



AIR COMPRESSOR

## THE Ingersoll-Sergeant Drill Co.,

Rock Drills

AND Air Compressors

MODERN, DURABLE AND GUARANTEED to do the Work.

Write for Full Particulars

26 Cortlandt Street,

New York City



ROCK DRILLING

## INCORPORATED MINES PAYING DIVIDENDS.

NAMES OF MINES	LOCATION	No. of Shares	Capital Stock	Par Value	Amount of last Dividend	Date of Last Dividend	Total Amount Paid in Dividends	Kind of Mineral Produced
Aetna Cons.	California	100,000	\$ 500,000	\$ 5	\$ 10	Sept 1897	\$ 110,000	Q.
Ajax	Utah	300,000	3,000,000	10			1,000,000	G, C, S, L
Alaska, Treadwell	Alaska	200,000	5,000,000	25	35 1/2	October, 1897	3,250,000	G.
Alaska, Mexican	Alaska	200,000	1,000,000	5	10	Oct., 1897	297,031	G.
Alice	Montana	400,000	10,000,000	25	03	Oct 1897	1,055,000	G.
Alice	Utah	400,000	10,000,000	25	05	April 1898	1,075,000	S, L, G.
Anaconda	Montana	1,200,000	30,000,000	25	1 25	May 1897	3,750,000	C.
Anchoria Leland	Colorado	600,000	600,000	1	01	Oct 1897	84,000	G.
American Gold	Colorado	300,000	3,000,000	10	02	Aug 1897	273,000	G, S, L
Atlantic	Michigan	40,000	1,000,000	25	1 00	Feb. 1897	740,000	S.
Bald Butte	Montana	250,000	250,000	1	03	Sept 1897	512,500	G, C, S.
Bangkok C-Bell	Colorado	600,000	600,000	1	01	July 1896	107,510	S, L, G.
Big Six	Colorado	500,000	500,000	1	00 1/2	April 1897	5,000	G, S.
Boston & Montana	Montana	150,000	3,750,000	25	3 00	Aug 1897	6,275,000	G, C, S.
Bullion Beck and Champion	Utah	100,000	1,000,000	10	50	Mar 1897	2,485,000	G, S.
Bunker Hill and S	Idaho	300,000	3,000,000	10	05	Oct 1897	324,000	S, L.
Cariboo	British Col.	8 0,000	800,000	1	02	May 1897	156,965	G.
C. O. D.	Colorado	50,000	500,000	1	01	March 1896	25,000	G.
Calumet & Hecla	Michigan	10,000	2,500,000	25	10 00	Oct 1897	50,850,000	C.
Centennial Eureka	Utah	30,000	1,500,000	50	1 00	Mar 1897	2,010,000	S, L.
Central Lead	Missouri	4,000	400,000	100	1 00	Oct 1897	16,000	L.
Charleston	South Car.	10,000	1,000,000	100	1 00	Feb 1897	150,000	G.
Champion	California	34,000	340,000	10	25	Aug 1897	278,200	G.
Chloride Point	Utah	500,000	500,000	1	01	Dec. 1897	5,000	G, S.
Crescent	Utah	24,000	600,000	25		July 1897	280,000	
Daly	Utah	150,000	3,000,000	20	25	Mar 1897	2,925,000	S, L.
Deadwood Terra	Dakota	200,000	5,000,000	25	40	June 1897	1,320,000	G.
De Lamar	Idaho	400,000	2,000,000	5	25	Jan 1897	2,250,100	S, L.
Della S.	Colorado	1,000,000	1,000,000	1	10	Jan 1897	60,000	G.
Doe Run	Missouri	5,000	500,000	100	50	October 1897		L.
Dalton and Lark	Utah	2,500,000	2,500,000	1	00 1/2	August 1896	87,500	S, L.
Elkton Consolidated	Colorado	1,250,000	1,250,000	1	03	Sept 1897	361,960	G, S.
El Paso	Colorado	650,000	650,000	1	01	Aug 1897	5,393	G, S.
Eureka Hill	Utah	10,000	1,000,000	100		1897	1,850,000	
Florence	Montana	500,000	2,500,000	5	01	May 1897	132,530	S.
Galena	Utah	100,000	1,000,000	10	05	Jan. 1897	71,000	G, S, L
Garfield Grouse	Colorado	1,200,000	1,200,000	1	01	Feb. 1897	24,000	G.
Gemini	Utah	5,000	500,000	100		1897	500,000	
Geyser-Marion	Utah	300,000	1,500,000	5	02	May 1898	84,000	G.
Golden Eagle	Colorado	1,000,000	1,000,000	1	01	Sep 1896	10,000	G.
Golden Fleece	Colorado	600,000	600,000	1	01	Feb. 1897	569,179	G, S.
Gold Coin	Colorado	200,000	1,000,000	5	05	Aug 1897	150,000	G, S.
Gold and Globe	Colorado	750,000	750,000	1	3-10	July 1897	51,625	G.
Hecla Consolidated	Montana	30,000	1,500,000	50	50	Feb 1897	2,175,000	S, G, L, C.
Helena & Frisco	Idaho	500,000	2,500,000	5	04	August 1896	475,000	S, L.
Highland	S. Dakota	100,000	10,000,000	100	20	Oct 1897	3,424,918	G.
Holy Terror	S Dakota	300,000	300,000	1	03	Sept 1897	18,000	G.
Homestake	Dakota	125,000	12,500,000	100	25	Oct 1897	6,431,250	G.
Hope	Montana	100,000	1,000,000	10	10	Nov 1897	732,252	S.
Horn Silver	Utah	400,000	10,000,000	25	05	April 1898	5,120,000	S, L.
Idaho	Brit. Col.	500,000	500,000	1	05	Mar 1887	152,000	
Iowa	Colorado	1,000,000	1,000,000	1	00 1/2	Oct 1897	65,000	G.
Iron Mountain	Montana	500,000	5,000,000	10	01	Sept 1897	497,500	S.
Isabella	Colorado	2,250,000	225,000	100	00 1/2	June 1897	270,000	G.
Kearsarge	Michigan	40,000	1,000,000	25	10	Aug 1897	160,000	C.
Last Chance	Utah	500,000	500,000	1	04	Jan 1897	42,000	S, L.
Le Roi	British Col.	500,000	2,500,000	5	10	Oct 1897	625,000	G.
Minnesota	Minnesota	165,000	16,500,000	100	1 50	July 1896	3,240,000	L.
Montana Ore Purchasing	Montana	40,000	1,000,000	25	01	October 1897	640,000	
Morning Star	California	2,400	240,000	100	8 00 1/2	Sept. 1897	558,600	G.
Mt. Rosa	Colorado	1,000,000	1,000,000	1	00 1/2	Oct. 1896	30,000	G.
Mercur	Utah	200,000	5,000,000	25	18	May 1898	1,066,000	G.
Mammoth	Utah	400,000	10,000,000	25	05	June 1898	1,250,000	G, S, C, L.
Moon Anchor Gold	Colorado	600,000	600,000	1	02	Nov 1897	63,000	G.
New Elkhorn	Colorado	300,000	1,500,000	5	24	Sep. 1896	72,000	G.
New York & Hon. Rosario	Central A.	150,000	1,500,000	10	10	Oct. 1897	832,500	S, G.
Napa	California	100,000	700,000	7	20	Oct 1897	870,000	Q.
New Idria Quicksilver	California	100,000	500,000	5	10	Sept 1897	20,000	Q.
Ontario	Utah	150,000	15,000,000	100	75	Dec. 1897	13,542,500	S, L.
Osceola	Michigan	50,000	1,250,000	25	1 00	June 1897	2,172,500	C.
Parrot	Montana	230,000	2,300,000	10	06	June 1897	1,656,122	C.
Pennsylvania Consolidated	California	51,500	5,150,000	10	05	Sept 1897	20,750	
Portland	Colorado	3,000,000	3,000,000	1	01 1/2	Oct 1897	1,163,000	G, S.
Princess	Colorado	1,000,000	1,000,000	1	00	Feb 1897	45,000	G.
Quincy	Idaho	100,000	2,500,000	25	4 00	August 1897	9,470,000	C.
Rambler-Cariboo	Brit. Col.	1,000,000	1,000,000	1	02	April 1897	40,000	
Reco	Brit. Col.	1,000,000	1,000,000	1	50 1/2	May 1897	187,500	S, L.
Sacramento	Utah	1,000,000	5,000,000	5	00 1/2	June 1898	35,000	G.
Small Hopes Consolidated	Colorado	250,000	5,000,000	20	10	Mar 1896	3,275,000	S.
South Swansea	Utah	150,000	150,000	1	05	April 1898	90,000	S, L.
Standard	California	200,000	20,000,000	100	10	Sept 1897	3,757,888	G, S.
St. Joseph	Missouri	250,000	2,500,000	10	15	Oct 1897	24,000	L.
Silver King	Utah	150,000	3,000,000	20	25	June 1898	1,575,000	S, L, G.
Slocan Star	Brit. Col.	2,000,000	1,000,000	0.50	05	Mar 1897	350,000	
Smuggler Union	Colorado	50,000	5,000,000	100	1.00	Oct 1896	150,000	G, S.
Swansea	Utah	100,000	500,000	5	05	June 1898	100,000	S, L.
Tom Boy	Colorado	200,000	2,000,000	10	20	March 1896	410,000	G.
Tamarack	Michigan	60,000	1,500,000	15	3 00	June 1897	4,950,000	C.
Union	Colorado	1,250,000	1,250,000	1	01	June 1896	73,000	S.
Utah	Utah	100,000	1,000,000	20	01	Dec. 1897	177,000	G, S.
Utah Consolidated	Utah	30,000	150,000	5	02	Sept. 1896	3,000	S, L.
Victor	Colorado	200,000	1,000,000	5	10	March 1897	765,000	G.
Western Mine Enterprise	Montana	500,000	500,000	1	10	Mar 1897	12,000	
War Eagle	British Col.	500,000	500,000	1	06	October 1896	187,000	

S, Silver.

G, Gold.

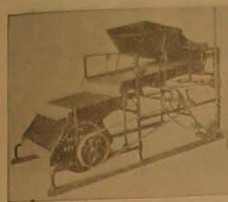
L, Lead.

C, Copper.

Q, Quicksilver.

I, Iron.

B, Borax.

**KLONDIKE MACHINE.**

If you are going to the Klondike or any other country to placer mining you cannot afford to be without one of our placer machines. It will work any class of placer ground, river or sea sands, it will make a clean saving of the fine float gold as well as the coarse. The material is separated into four different grades in passing through the machine, a coarse screen is arranged over the hopper to cut out the rocks and gravel; it is fed regularly on to the screen below; a series of riffles are arranged at the end of this screen to catch any coarse gold that will not pass through the screen, the material then passes over the riffle table (steel hungarian riffles) on to the screen over the amalgamating plates and cylinder, this fine screen cuts out all the coarse gauge, allowing nothing but the water and fine material to pass through the Amalgamator, this avoids any scouring whatever. The riffle table and hopper has an end shake moving both ways, this machine for dry countries, as it requires very little water. By attaching one of our pumps the water can be used over and a large amount of work can be done with a small amount of water, the pump will lift water 20 feet from a stream or well. As a gold saver this machine has no equal, it is light, simple, and durable, can be packed, the heaviest piece weighing 20 pounds, built almost entirely of metal, three sizes, price \$150, \$300, \$450, capacity 10, 25 and 40 tons; weight, 175, 400, and 550 pounds.

PACIFIC MINING MACHINERY CO.,

129 First St., San Francisco, Cal.

**The Pulsometer Steam Pump**

"THE MINER'S FRIEND"  
Often Imitated--Never Equalled Over 20,000 in Use

**RECENT IMPORTANT IMPROVEMENTS**

The Handiest, Simplest and Most Efficient Steam Pump for General Mining, Quarrying, Railroad, Irrigation, Drainage, Coal Washing, Tank-filling and for Pumping Back Liquids heavily impregnated with sediment. Muddy or gritty liquids handled without injury to the Pump.

**AGENTS**

PARK & LACY CO., A. M. HOLTER HDW. CO., MITCHELL-LEWIS & STAVEL CO.  
San Francisco, Cal. Helena, Mont. Portland, Oregon.

**Pulsometer Steam Pump Co.**

133 Greenwich Street, New York City

**WEBBER PATENT COMPRESSION GRIP**

IS USED ONLY ON THE PATENT

**Bleichert Wire Rope Tramway,**

AND OTHERS, MANUFACTURED BY

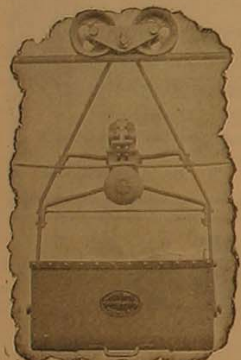
**THE TRENTON IRON COMPANY,**

TRENTON, NEW JERSEY.

ENGINEERS AND CONTRACTORS

AND

Sole Licensees in North America for the Bleichert System



No lugs or knots of any kind required on the traction rope, giving longer service, and saving in repairs.

Illustrated book upon application

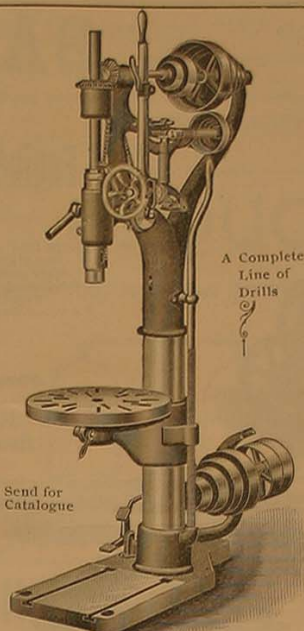
Also, Wire Rope Equipments

for Surface and Underground Haulage, Transmission of Powers, Etc.

**NEWTON M. BELL, AGENT**

109 California Street,

SAN FRANCISCO, CAL.

A Complete  
Line of  
DrillsSend for  
Catalogue**UPRIGHT DRILLS**

THAT ARE MADE BY

W. F. & JOHN BARNES CO.,  
105 Ruby Street, Rockford, Ill.  
ARE SOLD IN  
San Francisco by  
HENSHAW, BUCKLEY & CO.

Established 1872.

**F. E. BRANDIS, SONS & CO.****ENGINEERING****INSTRUMENTS**

FOR ALL PURPOSES.

812-814 GATES AVE., BROOKLYN, N. Y.

Catalogues mailed on application.

Founded by Mathew Carey, 1785.  
**HENRY CAREY BAIRD & CO.,**  
Industrial Publishers, Booksellers and Importers  
810 Walnut St., Philadelphia, Pa., U.S.A.  
Our new and revised *Catalogue of Practical and Scientific Books* 92 pages, 8vo, complete to February 1, 1898, and our other catalogues and Circulars the whole covering every branch of Science applied to the Arts, sent free of postage to any one in any part of the world who will furnish his address.

**THEODOR LEXOW**

195 Broadway New York

Importers of

**CARBONS**

— FOR —  
DIAMOND DRILLS and all Mechanical  
Purposes

Henry Demmert

I. C. YAWGER, SUCCESSION TO VICTOR BISHOP &amp; CO.



21 MAIDEN LANE

NEW YORK

**DENVER PUBLIC --- SAMPLING WORKS,**

M. E. SMITH, PRESIDENT.

ORES SOLD ON THE PUBLIC MARKET.

Denver, Colo.

**MINERALS WANTED**

Gold and Silver Quartz Specimens, Crystals, Opals, Turquoise, etc., etc.

Buy in Any Quantities—Pay good prices—Cash

E. C. MOLLER,

538 East 86th Street,

NEW YORK

**Dividend Paying and Investment Mining Stock****W. E. HUBBARD & CO.,**

Tel. 505

15 W. 2d South St., Salt Lake City, Utah

**GALDWELL BROS.**

Tacoma and Seattle, Wash.

MANUFACTURERS AGENTS

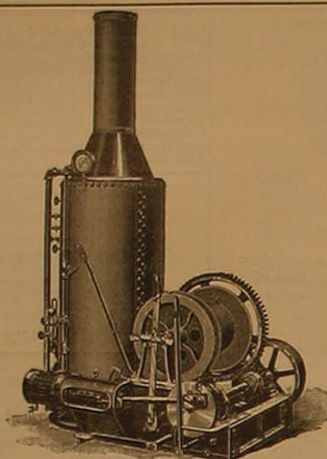
AND DEALERS IN

**MACHINERY and MINE SUPPLIES**

We carry a Very Large and Complete Stock



It Will Pay You to Write Us for Quotations



# BAKER & HAMILTON,

HIGH GRADE

Engines, Boilers, Ice Machines, Mining Tools, Etc., Etc.

THIS CUT represents our Single Engine PROSPECTOR'S HOIST, from 6 H. P. up, constructed with sectional iron frame, reversible link motion, improved brake, etc. Engine and Hoist can be disconnected and used for other purposes. Hoist and Engine can be shipped knocked down, in pieces suitable for transportation over difficult roads and trails. We also carry Double Engine Hoists, same type, with or without Boilers, from 12 H. P. up. This machinery is built in the most substantial manner possible, and on the most approved principles. We recommend them in every particular.

Write for Prices; They Will Interest You

SAN FRANCISCO, CAL.

BRANCH HOUSES:  
Sacramento and Los Angeles.

FACTORY:  
Benicia, California

## Expense

In the operation of Mines  
is reduced by using our

## Car Wheels.

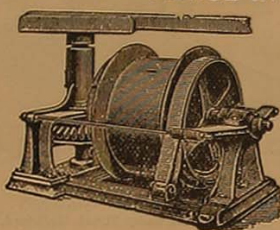
Price and wearing qualities  
reduce the expense.

## Globe Iron Works

STOCKTON, CAL.

WRITE FOR PRICES.

### EL PASO AUTOMATIC HORSE WHIM



This is the latest improved horse power hoist offered prospectors, possessing all the best features of other styles with improvements added. The end thrust is entirely done away with, thus increasing the efficiency and saving considerable wear. The automatic safety break is so arranged that accident is impossible, being in position until held out by operator to lower bucket. It is made entirely of iron and steel. Weight, about 1,200 pounds. Heaviest single piece, 275 pounds. Price, f.o.b. Colorado Springs, \$90. Cars, Buckets, Rope, Rails, etc.; The Climax Engines. Manufactured by

The Russell Iron Works Co.,  
COLORADO SPRINGS, COLO., U. S. A.

## UNION HARDWARE AND METAL CO.

DEALERS IN—

Boiler Tubes, Iron Pipe and Fittings

RAILROAD, MILLING, MINING and FOUNDRY SUPPLIES

14 and 216 N. Los Angeles Street

Los Angeles, Cal.

Assaying in all its Branches.

Determinations Accurately Made



The Bi-Metallic ....

## Assay Office

and Chemical Laboratory

R. A. PEREZ, E. M., Manager

Formerly Chief Assayer in El Paso Smelting Works, El Paso, Texas; Assistant Chemist Consolidated Kansas City Smelting and Refining Co., Argentine, Kansas.

124 South Main Street,

Los Angeles, Cal.

# IMPERIAL

(Trade Mark)

## BOILER COMPOUNDS

For the Prevention and Removal of Scale—in Steam Boilers.

Please mail us a specimen of your Boiler Scale which we will analyze for you Free of Charge and prepare a compound for your special case, and guarantee satisfactory results.

ESTABLISHED 1876

IMPERIAL CHEMICAL CO.,

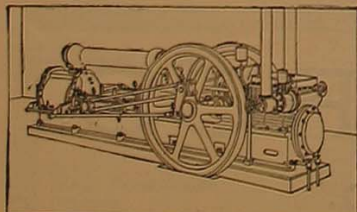
Indispensable to Mining and Mill Men

Office and Laboratory,  
322 N. American Street, Philadelphia, Pa.

## NORWALK IRON WORKS CO.

SOUTH NORWALK, CONNECTICUT.

### THE NORWALK AIR and GAS COMPRESSOR



In use in every State in the Union, Central America, and South America, Great Britain, etc., Also used by the U. S. Army and Navy.

Especially Designed for  
Driving

ROCK DRILLS,  
PNEUMATIC LOCOMOTIVES,  
ENGINES, PUMPS  
COAL CUTTERS.

And Other Mining Machinery. The Best Machine for Compressing Air for all Dynamic Purposes. Send for Illustrated Descriptive Catalogue.

HENSHAW, BULKLEY & C., Agents San Francisco

## STEEL CASTINGS

From 1 to 40,000 pounds weight

Of Open Hearth or Chester Steel. True to Pattern, Sound, Solid. Gearing of all kinds and Crank Shafts. Shoes, Dies, Crusher Plates, Bosses, Tappets and Roll Shells. Steel Castings of every description.

Chester Steel Castings Co.,  
Works Chester, Pa., Office, Library St. Phila., Pa.



## Randsburg Gold Fields

VIA

### Santa Fe Route

Leave Los Angeles, 9:50 a. m.  
Leave San Bernardino 12:10 p. m.  
Arrive Barstow 3:15 p. m.  
Leave Barstow 3:55 p. m.  
Arrive Kramer, 5:05 p. m.  
Arrive St. Elmo, 8:25 p. m.  
Arrive Johannesburg 8:50 p. m.

Returning Trains Leave  
Johannesburg 9:00 p. m.  
Arrive San Bernardino 5:35 a. m.  
Arrive Los Angeles, 8:25 a. m.

A through passenger coach is run between Barstow and Johannesburg.

Through tickets and particulars of any Santa Fe Route Agent.

SAN FRANCISCO OFFICE  
644 MARKET ST.

LOS ANGELES OFFICE  
200 S. SPRING ST.



## BUFF & BERGER

Mining Transits

With patent interchangeable auxiliary. Telescope for use on top or side in vertical sighting. Our friends are cautioned against infringements foreign or domestic as attempts have been made of late to mislead the public.

SEND FOR CATALOGUE.

11 Province Court, Boston, Mass.

Mines Examined Processes Tested

## HORACE F. BROWN, M. E.

PATENTEE OF  
BROWN'S SYSTEM OF MECHANICAL ROASTING  
FURNACES, Complete Automatic Milling  
Processes, Etc.

1606-7 MANHATTAN BLD., CHICAGO

## JOHN STEWART

MINING ENGINEER

Address—Mining and Metallurgical Journal  
LOS ANGELES, CAL.

Examiner and Reports on Mineral Properties

**Ores! Ores! Ores!!****Gold, Silver and Lead Ores and Concentrates**

Purchased at Reduced Rates for Treatment.

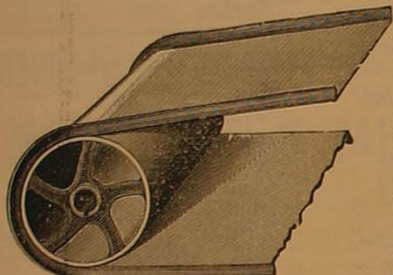
**Selby Smelting and Lead Co.**

416 MONTGOMERY ST., San Francisco

Consign Shipments to Vallejo Junction, Cal.

**W. O. ABBOTT, . . . . ASSAYER . . . .**ASSAYING IN ALL ITS BRANCHES  
CHEMICAL DETERMINATIONS ACCURATELY MADE

TOMBSTONE - - - ARIZONA

**Spadone's Concentrator Belts** Patented

This illustration shows the edge flaring outwardly as it passes over the pulley. This relieves the strain from the top and bottom of the edge by directing the strain automatically to the inside face surface of the edges. Heretofore all belts have been so constructed that when they pass over the pulleys or rolls, a direct strain comes upon the top or at the base of the edges, causing the edges to break away from the body of the belts in a very short time. We avoid this Mechanical Defect by our Spadone Curved Edge. Belts made to fit any machine—4, 5 and 6 feet wide. Prices and samples on application.

Send us your order for Water, Air Drill, Steam, Suction and Fire HOSE, RUBBER BELTING, RUBBER PACKING and LEATHER BELTING.

The Gutta Percha Rubber and Manufacturing Company,

30 and 32 FREMONT STREET,

SAN FRANCISCO, CAL.

**MATTISON & CO.**

29 LIBERTY ST.,

NEW YORK CITY

**ANTIMONY**

BUY

ANTIMONY ORES AND

CRUDE ANTIMONY

\* WRITE FOR FULL PARTICULARS

**Minerals Wanted**Ores, Crystallized Specimens, Loose and detached Crystals  
Wanted in Quantity

If you have any Ores, Unidentified, write me.

**ROY HOPPING,**

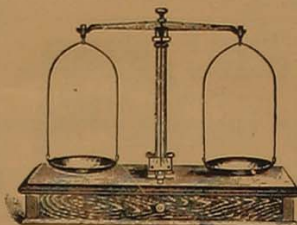
5 and 7 DEY STREET,

NEW YORK CITY

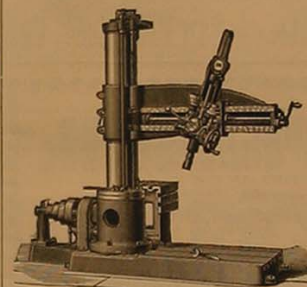
**C. DUCOMMUN,**

300-302 N. MAIN STREET,

LOS ANGELES

**Assayers Material  
Mine and Mill Supplies**

Dixon's Black Lead Crucibles, Denver Fire Clay Crucibles, Muffles, Scorifiers, etc.; Quicksilver, Drill Steel, Retorts, Mortars, Gold Pans, Drilling Hammers, Drifting Picks, Horn Spoons and Shovels.

**Half Universal Radial Drills**

The special features which have so highly recommended this style of Drills are our double columns, steel gearing, power and hand feeds, quick return motion to spindle. Furnished in three sizes, with large variety of tables, adapting the drills for every class of work possible.

**Bickford Drill and Tool Co.**

CINCINNATI, OHIO, U. S. A.

HENSHAW, BULKLEY &amp; CO., AGENTS

San Francisco, Cal.

**WHITNEY COMPANY****Iron and Steel. Miners, Blacksmiths, Machinists Supplies**

Agents for Arizona and New Mexico for Marsh Steam Pump, Agents Hercules High Explosives, Miner's Supplies by car load, Fairbanks-Morse Hoisting Machinery and Engines. Full line of Steam Fittings and ENGINEERS Supplies. A specialty made of Supplying the Mining Trade of the SOUTH-WEST

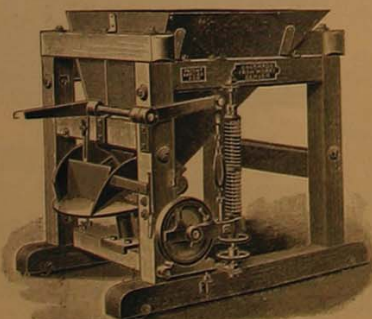
ALBUQUERQUE

\*

\*

\*

NEW MEXICO

**When Installing a Tramway Have the****The Only Automatic  
(Double rope) Tramway Built**

CHALLENGE ECLIPSE ORE FEEDER  
Will feed both wet and dry ores

**Finlayson Patent Automatic Wire Rope Tramway**Economy  
in OperationSimplicity in  
ConstructionEasy  
Running**THE COLORADO IRON WORKS COMPANY,**

ESTABLISHED 1860

**DENVER, COLORADO.**

SOLE MANUFACTURERS

ENGINEERS AND MANUFACTURERS OF

**Ore Milling  
and Smelting  
Equipments**

CATALOGUE ON APPLICATION



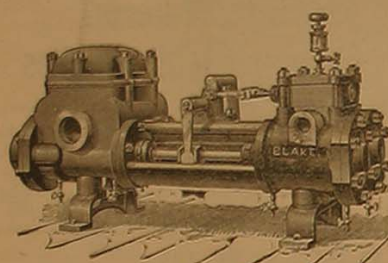
BLACK HAWK ORE BREAKER

# A. A. BAILEY

MANUFACTURER AND DEALER OF THE LEADING  
**Packings and Engineers Supplies**  
 LUBRICATING OILS AND COMPOUNDS  
 Exclusive Manufacturer of the UNSURPASSED  
**BAILEY**

Anti-Friction Metal and all other Grades of Babbitt Metal  
 Sole Agents for Reliable Steam Pumps  
 300 South Los Angeles Street, - - - LOS ANGELES, CAL.

**Geo. F. Blake Mfg. Co.**  
 NEW YORK, N. Y.



Boiler Feed Pumps,  
 Tank or Light Service  
 Pumps,  
 Combined Air and Circu-  
 lating Pumps,  
 Drainage and Irrigating  
 Pumps,  
 Special Fire Pumps,  
 Independent Air Pumps  
 and Condensers  
 Water Works and Power Pumps.

Henshaw, Bulkey & Co., Agents. San Francisco, Cal.

## "READY ROCK" ASPHALT ROOFING

THE STANDARD ROOFING OF THE  
 UNITED STATES

Absolutely the most durable, convenient and strongest roofing  
 material made.

**"Ready Rock" Asphalt Roofing Co.**

1006 North Main Street, Los Angeles, Cal.  
 TELEPHONE MAIN 1575

## Why SEND YOUR MONEY EAST FOR

Shoes and Dies, Camp Tappets, Car Wheels, Shafting, Hangers,  
 Pulleys, Ore Cars and Iron and Brass Castings, when they can  
 be obtained for the same price and in less than half the time

AT THE

**Albuquerque Foundry and Machine Works,**

Repairing of Mill and Mining Machinery a Specialty, Albuquerque, New Mexico

## F. A. A. WILLIAMS, Mines & Mining

A free Milling Gold Property at a bargain  
 Correspondence Solicited

—@ TRINIDAD, COLORADO

## N. D. BURLINGHAM, M. E.

Practical Examinations of Mines  
 anywhere. Plans and estimates  
 for Mining Machinery on  
 short notice.

Forty Years Experience in Mining and Milling  
 315 W. FIRST STREET, LOS ANGELES.

## ASSAYERS AND CHEMISTS

Working tests of Ores by all processes.  
 Samples by mail or express solicited

**TREMAINE & FROELICH,**

132 Third St., PORTLAND, OREGON

## CHICAGO SCHOOL OF ASSAYING,

J. DUNRAVEN YOUNG, Director.  
 1759 MONADNOCK BLDG., CHICAGO, ILL.  
 Courses in Elem. Chemistry, Chemical Analy-  
 sis, Fire Assaying of Gold, Silver, Copper and  
 Lead Ores, etc. Ore Testing, including Mill  
 Runs by Mercury, Cyanide and Chlorination  
 processes. Individual instruction only. Open  
 evenings. Opportunity for Miners & Prospectors.

## Harper & Reynolds Co.,

## MINING SUPPLIES

— AGENTS FOR —

**Judson Dynamite and Powder Co., Galvanized Spiral  
 Pipe, Steel and Iron.**

152-154 North Main Street,  
 151-152 North Los Angeles Street, } LOS ANGELES, CAL.



California Bellows Manufacturing Co.  
 123 Beale St., San Francisco, Cal.

MANUFACTURERS OF  
**BLACKSMITH BELLOWS**

And Bellows of Every Description

Write us for our new Catalogue

## THE CHEAPEST PLACE ON EARTH

TO OUTFIT A MINE IS AT

**The J. H. MONTGOMERY MACHINERY CO.,**

1220-22 Curtis St., Denver, Colo., U. S. A.

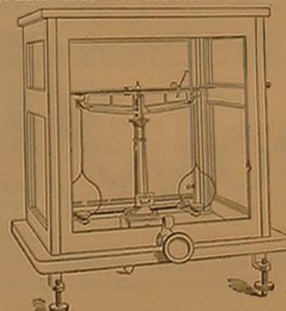
**Just Listen—Reliable Common  
 Sense Steel Whim, price reduced  
 to \$100. Steam Hoisters, \$300 and  
 up; hand hoisters \$30; steel ore  
 buckets all prices; prospectors'  
 stamp mills \$200. A 10-  
 stamp mill, new,  
 850 lb. stamps  
 high mor-  
 tars.**

latest improved, only \$300. Ores tested and  
 amalgamation and concentration mills built to  
 fit the ore and guaranteed to save what we say.

Coal Mine equipments, Screens,  
 Jigs, Tramways, Arastors, Chillian  
 Mills, Ore Sacks, etc. Cornish  
 Rolls, 12x20, weight 6,000 lbs.,  
 price \$300; Feeders, Rock Drills  
 and Compressors, Bumping  
 Tables, Chlorination Mills, etc. Blake Crush-

ers, 7x10, weight  
 8,100 lbs., only \$250.  
 Granite Mills.  
 Our patent  
 Turntable Car  
 has equal load  
 on each  
 wheel, wears  
 even, dumps au-  
 tomatically. Our 100  
 page catalogue with  
 hundreds of useful tables,  
 FREE. Best Machinery and  
 least money for it.

## QUEEN NO. 4 ASSAY BALANCE



Aluminum Beam, Agate Knives and Plates  
 Sensibility 1-c. mg. The Best Low-Price Assay  
 Balance on the Market. Send for Circular.

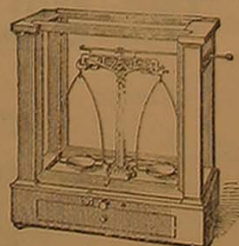
**QUEEN & CO.,**

Optical and Scientific Instrument Works  
 1010 Chestnut Street,  
 N. Y. Office, 116 Fulton St. Philadelphia

ESTABLISHED IN 1840

**HENRY TROEMNER,**

710 Market St., Philadelphia, Pa.



## Assay Balances and Weights

In use in all the U. S. Assay Offices  
 in America

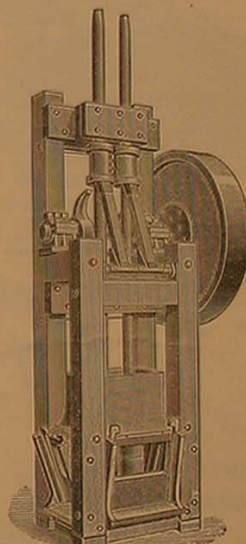
PRICE LIST ON APPLICATION.

# JEFFREY

Roller, Steel and Special Chains.  
**ELEVATORS**  
**CONVEYORS**  
 FOR HANDLING MATERIAL OF ALL KINDS.  
 WIRE CABLE  
 CONVEYORS.  
 For long and  
 short distance  
 conveying.

**THE JEFFREY MFG. CO.** 41 DEY STREET,  
 COLUMBUS, OHIO. Send for Catalogue.

## "HENDY" IMPROVED



**Triple Discharge Two-Stamp**

**MILL**

Capacity six to ten tons per day  
 PRICE, \$450.00

**JOSHUA HENDY MACHINE**  
 WORKS

38 to 44 Fremont St., San Francisco, Cal.

## ROGERS & BALDWIN,

**MACHINE SHOPS**

All kinds of repairing  
 for Engines, Boilers  
 and Machinery

Riverside, Cal.

## ANTIMONY.

We buy Antimony Ore in any quan-  
 tity and pay prompt CASH for same.  
 Write us and let us know what you  
 have.

**Chapman Smelting Works Co.,**  
 (INCORPORATED)

224 Battery Street, San Francisco, Cal.

**J. B. Pope**  
 U. S. Mineral Surveyor,

SAN BERNARDINO, CAL.



**Quartz Screens**  
A specialty. Round, slot or buried slot holes. Genuine Russia Iron, Homogeneous Steel, Cast Steel or American planished Iron, Zinc, Copper or Brass Screens for all purposes. CALIFORNIA PERFORATING SCREEN CO., 145-147 Beale St., S. F.

**E. C. WOODWARD,**  
**Assayer and Chemist**  
Telephone 315  
24 E. Kiowa St., Colo. Springs, Colo.

**KLONDIKE**

WANTED—Men and Women to know the cheapest, easiest and best route to KLONDIKE. How to go and make expenses on the way. Circular free for stamps. Agents wanted for steamship lines.  
**G. W. McFARLEY,**  
1015 1/2 First St., Portland, Or.

**Pacific Coast and Mexican Agents**



ALL KINDS OF ASBESTOS GOODS  
**DE SOLLA DEUSSING COMPANY,**

Keasby & Mattison's

**Magnesia Sectional  
Steam Pipe and Boiler  
Covering**

The only Covering that water will not destroy. Indispensable in covering pipes conducting steam to pumps in mines.

Send for Testimonials.

4 California Street, San Francisco, Cal.

**EDWARD B. READ,**  
**Engineers' Specialties, Cylinder and Machinery Oils, Cylinder Lubricators,**

LORD'S BOILER COMPOUND, Cyclone Steam Flue Cleaner, Engine Compound Electric Spiral Packing, Shifting Compound, Crank Pin Grease, Wire Rope Grease, Extra Gear Grease, Belt Grease and Oil, Skin Grease, Elevator Grease, Crescent Flue Scraper, Oil Cups, Compound Cups, Dibble Lubricator, Packing and engineers' supplies.

CORUNDUM WHEELS.

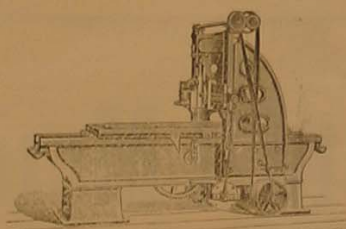
No. 12 First Street,

San Francisco, Cal.

**NEW HAVEN MFG. COMPANY**

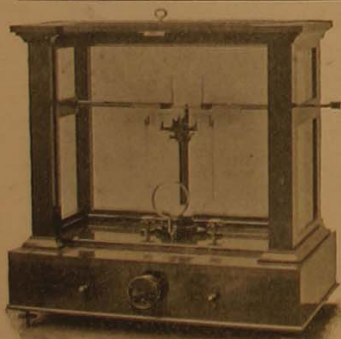
NEW HAVEN, CONN.

**IRON  
WORKING  
TOOLS,**



Engine Lathes, Pulley Turning Lathes, Iron Planers, Slotters, Upright Drilling Machines, Horizontal Drilling and Boring Machines, Etc.

**HENSHAW, BULKLEY & CO., Agents, San Francisco, Cal.**



**SMITH & THOMPSON**  
Manufacturers of  
**Fine Assay Balances**  
Write for Catalogue

2219 Stout street Denver, Colo.

Advertise in ...  
... The Journal

**The Giant Powder Company**

+ CONSOLIDATED +

Principal Office: 430 California Street  
SAN FRANCISCO, CAL.

\*  
P. J. NOLAN, General Agent for Mexico  
Apartado 230 CITY OF MEXICO.

\*  
A. A. SPARKS,  
Resident Agent Southern California.  
Room 438 Bradbury Block, LOS ANGELES, CAL.

\*  
**AGENTS**

Roy & Titcomb, Nogales, Arizona  
Samuel Hill, Prescott, Arizona  
Kellner's Store, Phoenix, Arizona  
Thomas Wilson, Tucson, Arizona

A. Calderon, Hermosillo, Mexico  
G. Moller & Co., Guaymas, Mexico  
Wohler Hartung & Co., Mazatlan, Mex.  
Delius & Co., San Blas, Mexico

Julio Hilderbrand & Co., Durango, Mexico  
Julio Hilderbrand & Co., Tofia, Mexico

J. P. De Fresno, Culiacan, Mexico  
T. Robison Bours, Alamos, Mexico

Manufactures Dynamite, Black Blasting and Sporting Powders.



**TANKS**

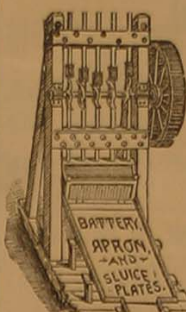
OF EVERY DESCRIPTION  
— FOR —

**Mines, Mills and Cyanide Plants**  
**Patent Non-Shrinking Water Tanks**

The only Tank that will stand the Desert and Hot Climate.  
Write for Catalogue and Estimate on any kind of Tank Work.

**Pacific Tank Co.**

33 BEALE ST., SAN FRANCISCO  
348 EAST 2d STREET, LOS ANGELES



**To Gold Miners!**

**Silver Plated Copper AMALGAMATING PLATES**

For Saving Gold In Quartz and Placer Mining.

EVERY DESCRIPTION OF MINING PLATES MADE.

Only Best Copper and Refined Silver Used. Old Mining Plates Replated. Twenty-six Medals Awarded. Gold, Silver, Nickel, Copper & Brass Plating.

**Denniston's San Francisco Plating Works**

653 and 655 Mission Street, San Francisco, Cal.

Telephone, Main 5931.

E. G. DENNISTON,

Proprietor

Send for Circular.

**Foos Gasoline and Distillate Engine**

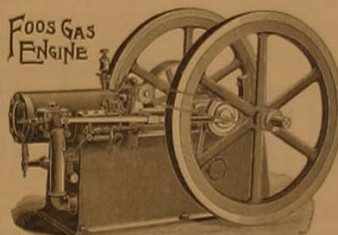
**The Best in the Market**

Ten Engines lately put in the Rand District operating Hoists, Mills and Pumps. We have sold 300 of these engines and we warrant them satisfactory. The Triumph Pump for deep wells throws a steady stream. No cranks or dead centers. The rods more vertically require less power than other pumps.

Studebaker Vehicles,  
Machinery, Engines

**S. W. LUITWEILER CO.**

200-202 N. LOS ANGELES ST.  
LOS ANGELES, CAL.



ESTABLISHED 1859

**Herman Kohlbush Sr.** 59 Nassau Street,  
New York, N. Y.

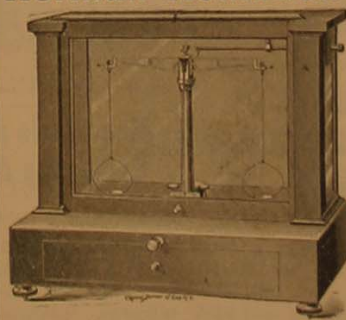
MANUFACTURER OF

**Fine Balances  
and Weights**

For every purpose where accuracy is required.

...

If you cannot obtain my goods from your supply house send direct to me for catalogue and prices.



**THE WILSON**

Forged High Grade Steel

**Shoes and Dies**

Guaranteed to Wear Longer and Prove Cheaper than any others. Made by use of Special Appliances. Patented Aug. 16th, 1892.

— Made only by —

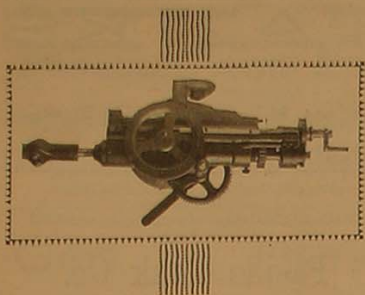
**WESTERN FORGE AND ROLLING MILLS**  
St. Louis, Missouri

**JOSHUA HENDY MACHINE WORKS**

SOLE AGENTS

38 to 44 Fremont Street,

San Francisco, Cal.



# The JACKSON Hand Power Rock DRILL

NO JAR EASILY OPERATED

We also deal in General Mining Machinery and Supplies

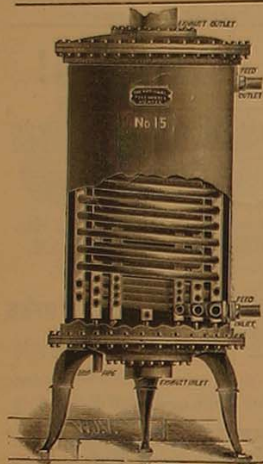
**The Jackson Drill and Manufacturing Co.**

N. Y. OFFICE,  
120 Liberty Street

Exhibition Rooms,  
1709 California St.,

DENVER, COLORADO, BOX 1352  
Offices 1757 Larimer St.

CABLE ADDRESS: "Jack Drill," New York, A. B. C. Code 4th Edition and Lieber.



## The National Feed Water Heater

Highest Premium at World's Fair

800,000 HORSE POWER IN USE

SIMPLICITY  
CHEAPNESS  
RELIABILITY  
EFFECTIVENESS

**Henshay, Bulkley & Co.,**

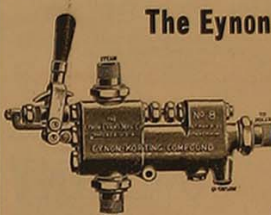
Agents,  
SAN FRANCISCO, CAL.

## P. & B. PAINT

FOR MINES, SMELTERS, CHLORINATION WORKS,  
THE CYANIDE PROCESS.

P. & B. Roofing put up in Rolls to lay 200 square feet, with Paint and Nails.  
Absolutely Acid and Alkali Proof.

PARAFFINE PAINT CO., Manufacturers, 312-314 W. 5th St., Los Angeles



## The Eynon-Korting Compound Injector

The Best for  
Quartz Mill  
and Smelter  
Boilers



Brass, Bronze and Copper Castings of every description.  
Send for Catalogue of the  
Injectors, Condensers, Blowers, Ventilators, Blast Nozzles,  
Syphons, Exhausters, Etc.

THE EYNON-EVANS MFG CO.,  
15th and Clearfield Streets, PHILADELPHIA, PA.

E. C. CREEL, Presidente.

JUAN A. CREEL, Gerente

# Compania Industrial Mexicana

Ferreria  
Fundicion de Fierro y Bronce

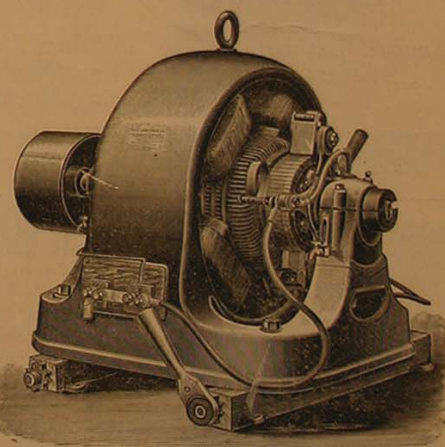
## Fabricantes...

de toda clase de

**Maquinaria para minas y  
Haciendas de Beneficio**

**Quebradoras Maquinas de vapor.**

Retortas, Ruedas Hidraulicas, Calderas  
de todas clases, Maquinas de extraction. Car-  
ros para mineral, Molinos Huntington. Bombas  
Malacates de Vapor panes de amalgamacion.  
Concentradoras, compresores de aire. Lavaderos,  
Haciendas de Lixiviacion; Hornos de chaqueta  
["Water Jackets."]



**Dinamos, Motores y Material  
Electrico.**

BARATURA y PRONTITUD.

Se envian circulares Pedido.

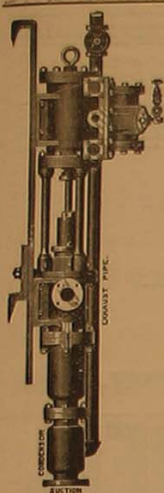
Se solicita la correspondencia.

Para informes dirigirse al gerente,

JUAN A. CREEL,

Chihuahua,

Mexico



## W. T. GARRATT & CO. Brass and Machine Works.

MANUFACTURERS

HOOKE STEAM PUMPS,  
MINERS' SINKING PUMPS,  
TRIPLE PLUNGER PUMPS,  
JACKHEAD MINING PUMPS,  
CENTRIFUGAL PUMPS,  
GONGS FOR MINE SIGNALS,  
LUBRICATORS & OILERS,  
SUCTION HOSE AND COUPLINGS,  
HYDRAULIC PIPES,  
IRON PIPE AND FITTINGS  
BABBITT METALS,  
PACKINGS  
REPAIRING PROMPTLY ATTENDED TO.

138 to 148 Fremont Street,  
SAN FRANCISCO, CAL.



## MINERS' OUTFITS.

IRON MORTARS,  
AMALGAM MORTARS,  
GOLD WASH PLANS,  
MINERS' HORNS,  
BATEAS, CRUCIBLES,  
HORSE-SHOE MAGNETS,  
MAGNIFYING GLASSES,  
IRON RETORTS,  
CHEMICALS, SCALES,  
WEIGHTS, ETC.

Including a full as-  
sortment of Mine and  
Mill Supplies, Assay-  
ers' Materials, Etc.

Sole Agents for the  
Pacific Coast for the

**W. S. TYLER WIRE WORKS CO.**  
Manufacturers of

Steel and Brass Wire Battery Screens.  
Agents for Baker & Adamson's Chemically  
Pure Acids. A full Stock always  
on hand.

Nitric Acid, sp. gr. 1.42; Muriatic Acid, sp. gr.  
1.20; Sulphuric Acid, sp. gr. 1.845.

**JOHN TAYLOR & CO.**  
63 FIRST ST., SAN FRANCISCO  
Prices on application.

## The State Ore Sampling Co.

DENVER, COLORADO.

Gold, Silver, Lead and Copper Ores and Matte  
sampled and marketed to the best advantage.  
With modern mills and machinery our facilities  
for sampling ores are the best.

Our long experience in the market enables us  
to obtain the highest prices for all marketable  
ore. Write for our "Reference Book." Send  
analysis of your ore for prices and information.

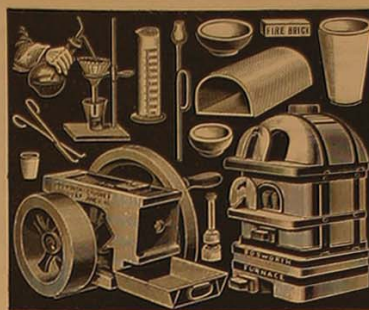
BAILY & MONNIG, Managers.

## Silver City Reduction Company

This plant has been purchased and will be  
operated in the future by the Estate of the late  
Senator George Hearst of California, under the  
general management of D. B. Gillette, Jr.  
It is the intention of the present management  
to largely increase the capacity of the plant and  
equip it with every modern appliance for the  
successful and cheap treatment of ores and con-  
centrates.

Consignments and Correspondence Solicited  
Advances will be made on ores.

Silver City, Grant Co. New Mexico



FACTORY:

3101-3141 Blake St., 1742-1746 Champa St., Denver, Col.

## Analytical Chemists and Assayers

Analysis made of ORES, Waters,  
Chemicals, Clays, &c. Umpire  
Work a Specialty

HAMMILL & MORRISON,  
144 Chestnut Street, PHILADELPHIA, PA.

## TIMOTHY W. SPRAGUE, S. B.

WITH

CHARLES HENRY DAVIS, C. E.  
CONSULTING ENGINEERS

99 CEDAR ST., NEW YORK 4 STATE ST., BOSTON  
DREXEL BLDG., PHILADELPHIA  
Electric Transmission of Power and Mine  
Equipments

## FAUTH & COMPANY,

(G. N. SARGMULLER),

Engineering and Mining Instruments,  
WASHINGTON, D. C.

Attention is called to our newly improved  
Mining Transit, with best Solar Attachment  
and Vertical Sighting Telescope and Quick  
Leveling Head.

This Cut Illustrates Our  
4 H.P. to 8 H.P.

## Hoisting Plant

We also build larger sizes to suit  
the demands of our  
customers.

The Hoist illustrated is designed to lift 1,000  
pounds 120 feet per minute with the smaller  
sized engine.

It is strong and exceedingly simple and durable,  
being entirely under the control of the  
operator, by the use of a single hand lever for  
hoisting, while the lowering is governed by a foot  
lever and brake.

No better device has been designed for this  
purpose.  
For prices and further information address the  
builders.

## THE Denver Fire Clay Co

Assayers' and Chemists'  
Supplies

MANUFACTURERS OF

Crucibles, Scorifiers & Muffles  
And all other kinds of

**Fire Clay Material.**

SPECIALTIES—Strictly c. p. Acids  
Test Lead, Bone Ash, Cyanide  
Potash, Argol, Borax, Borax Glass  
Iron Sulphides, Litharge, Soda  
Mining Fluxes, etc.

Sole Agents for the  
Ainsworth Balances

OFFICE:

3101-3141 Blake St., 1742-1746 Champa St., Denver, Col.

## HENRY RIVES ELLIS

Mining Engineer and Metallurgist

Ores Sampled, Assayed and Analyzed. Practical  
working tests by Stamp, Pan and  
all Processes.

Assay Office and Metallurgical Works,  
318 PINE STREET, SAN FRANCISCO, CAL.

## CLARENCE HERSEY, Assayer and Chemist,

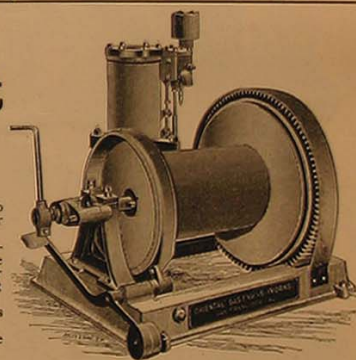
(Established 1879)

LEADVILLE, COLORADO

Samples by Mail or Express Re-  
ceive Prompt Attention

SPECIMEN ASSAY PRICES:

Gold silver and lead, \$1.00; any two of the  
above, 75c; any one of above, 50c; copper analy-  
sis, \$1; platinum, nickel or tin, \$5.00.  
Write for full price list and mailing envelopes



## ORIENTAL GAS ENGINE CO.

105 Beale Street, San Francisco, Cal., U.S.A.



## FULTON ENGINE WORKS

## Mining, Milling and Smelting Machinery

Estimates Furnished on all Classes of Mining Work

P. O. Box 296, STATION "C"

LOS ANGELES, CALIFORNIA

# WHITE, ROGERS & COM'Y.

CONSTRUCTING ENGINEERS AND MILLWRIGHTS

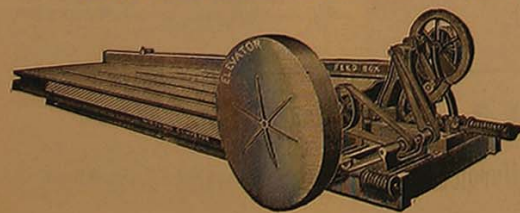
306 PINE STREET, SAN FRANCISCO, CAL.

Sole Pacific Coast Agents and Builders of the Celebrated

## WILFLEY CONCENTRATOR,

Price \$450 f.o.b. San Francisco

One of these Machines will take the place of TWO or THREE Belt Concentrators of any make and do very much better work.



WILFLEY CONCENTRATOR

We furnish superior Machinery and erect Stamp Mills, Hoisting and Pumping Works  
operated by Steam or Water Motors. Complete Concentrating and Smelting Plants for the  
concentration and recovery of gold, silver, copper and lead. Improved Power Drills and Air  
Compressors, Wire Rope Tramways, etc.

The Wilfley Table is fully covered by U. S. Patents Nos. 580,338 and 590,675.

Infringements will be prosecuted to the full extent of the law.

These Machines are Kept in Stock Ready for Immediate Shipment

**Chicago and Aurora Smelting and Refining Co.****Lead, Silver and Gold Ores**

PURCHASERS OF

Manufacturers of **BLUE VITRIOL**

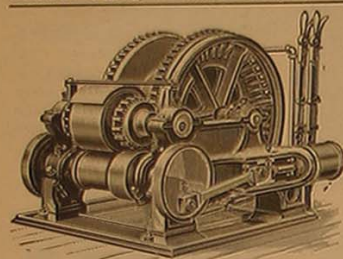
Works at Leadville, Colo., Aurora, Ill., and Chicago, Ill.

General Office, Woman's Temple,

Chicago, Illinois

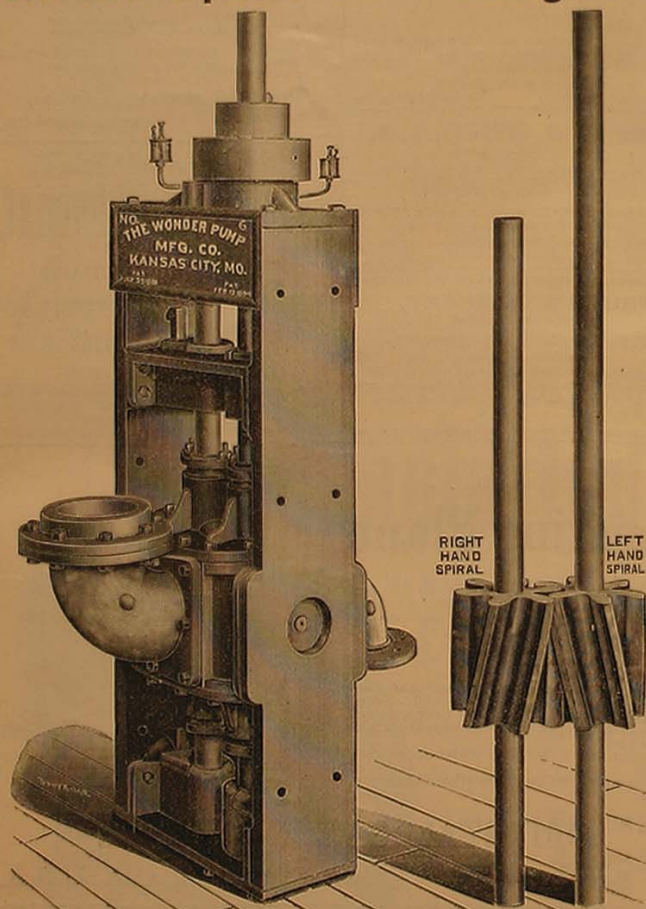
**GOLD and SILVER** REFINERS & ASSAYERS

Bullion Bought. No charges for parting: Gold \$20.30 per oz., Silver and Platinum at market prices. Assaying in all branches. Working tests made by all processes. Wastes and Concentrates bought. Prompt attention. Best Services. Your Trade Solicited

**PENN SMELTING AND REFINING WORKS, 901-903 Filbert St., PHILADELPHIA, PA.****We Offer You the Most Compact, Powerful and Economical****WINZE HOIST**

FOR STEAM OR COMPRESSED AIR

WRITE FOR CIRCULARS AND PRICES

**The HENDRIE & BOLTHOFF MFG. & SUPPLY CO., Denver, Colo.****The New Improved Wonder Mining Pump**

The only Mining Pump made that will work from pump to pump on the one discharge pipe, doing away with all reservoirs. Write

**The Wonder Pump Manufacturing Co.,**

ARMOUR BLDG., KANSAS CITY, MO., for catalogue

**Stockton Assay Office**

Gold and Silver Assays, \$2.00.  
Five Assays and over, \$1.50 each

329 E. Magnolia street, Stockton, Cal.

Send Samples and remittances  
by Express or mail.

**KLONDIKE OUTFITS**

I am prepared to contract for the complete outfitting of Parties going into the Klondike from Vancouver, B. C., the best place from which to outfit and sail.

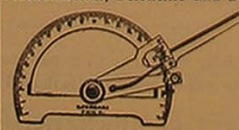
Direct Steamers. No duty to pay on goods.  
Write or wire for full particulars

**PERCY W. CHARLSON, General Broker**  
VANCOUVER, B. C. P. O. Box, 187  
CABLE ADDRESS, "CHALCOUVER"

**EAGLE PACKING**

Also White Eagle, Graphite, Hydraulic, Nitr and other brands for all purposes for which packing is used. Write for samples and prices. Manufactured by **James Glandling Co.,** 1927-9 North 6th St., PHILADELPHIA, PA.

Mathematical, Scientific and Drawing Instruments



S. E. Cor. 7th &amp; Chestnut Sts., Philadelphia, Pa.

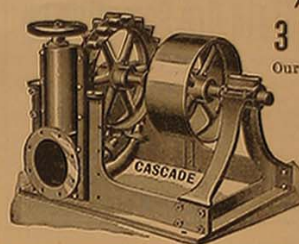
**Turbine AND Cascade WATER WHEEL**

Adapted to all Heads from

**3 Feet to 2000 Feet**

Our experience of 33 YEARS building Water Wheels enables us to suit every requirement of Water Power Plants. We guarantee satisfaction. Send for a Pamphlet of either Wheel and write full particulars.

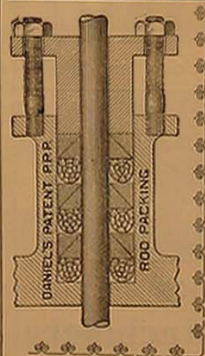
**James Leffel & Co.**  
SPRINGFIELD, OHIO, U.S.A.



\$35,000,000 in Dividends paid out by Utah Mines up to date.

**UTAH MINING STOCKS**

Weekly Market Report on application. Quotations by wire or mail.  
Reference: Any Bank in Salt Lake City.

**P. J. CONWAY & CO.,****SALT LAKE CITY, UTAH****DANIEL'S PATENT P.P.P. Diagonal Rod Packing**

For Steam, Water, Oil,  
Air, Ammonia, Etc.

SAVES LABOR  
SAVES POWER  
SAVES MONEY

It Represents Highest Class Materials and Greatest Service.

**NO PAY IF NOT AS CLAIMED**

SLIDING WEDGES, COMPENSATING FOR WEAR. OIL CUSHION TO ENAMEL AND LUBRICATE THE ROD.

**Best Packing for use in MILLS, MINES and SMELTERS**

MANUFACTURED ONLY BY

**G. A. DANIEL,** Philadelphia, Pa.

To Insure getting the Genuine see that Every Box and Wrapper has our Trade Mark.

**THOMAS PRICE & SON****Analytical Metallurgical and Physical Testing Laboratory**

524 SACRAMENTO STREET, SAN FRANCISCO, CAL.

**N. OHLANDT & CO.**

MANUFACTURERS OF

**Best Quality of BONE ASH for Assayers.**

Our Goods are used in all parts of the United States and Mexico.

EXTRA No. 1 and No. 2

CORRESPONDENCE SOLICITED

327 MARKET STREET, SAN FRANCISCO, CAL.

**Miners Attention!**

We Sell Powder, Caps, and Fuse, **Mining Machinery**, Belting, Asbestos Goods, packing of all kinds, Picks and Shovels, Iron and Steel; Iron Wheelbarrows, Ore Sacks, Tents, Portable Forges and General Mining Supplies. Agency Truax Mfg. Co and Studabaker Wagons.

WILCOX &amp; ROSE CO.,

San Bernardino, Cal.

**Engineers' and Draughtsman's Supplies**

Sole agents for Riefler's round system drawing instruments and Albert Ott's Planimeters, Planigraphs and other instruments of precision. Levels and transits of superior make.

F. WEBER & CO., PHILADELPHIA  
1125 CHESTNUT ST.,

Subscribe for

the Journal

**Pueblo Foundry,  
Machine Shops and  
Boiler Works**

— MANUFACTURERS OF —

Wrought and Cast Iron Water Jacket Furnaces, MINING and Irrigation Pumps, Engines, Boilers, Hoisters, Tanks, Derricks, MINING MACHINERY, Brass Castings; light and heavy Forging. New and Second-hand Engines, Boilers and pumps always on hand.

PUEBLO, COLORADO.

**The Machinery and Electrical Company,****Machinery and Supplies**

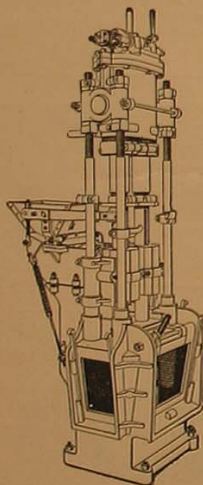
MINING HOISTS, WHIMS, ORE BUCKETS, Bates Corliss Engines, Snow Steam Pumps OIL CITY BOILERS AND ENGINES, Hercules Gas Engines, Lawrence Centrifugal Pumps GATES IRON WORKS MINING MACHINERY Tremaine Steam Stamp Mills Electric Lighting, Railway and Transmission Apparatus Washburn & Moen Mfg. Co's Wires and Cables

Also Dealers and Jobbers in

Shafting, Belting, Dodge Wood Pulleys, Hangers, Boxes, Etc.

WRITE FOR PRICES

351 and 353 N. Main St. Los Angeles, Cal.



TREMAINE STEAM STAMP

**HALLIDIE  
PATENT  
ROPEWAY**

— FOR THE —

Transportation of Ore, Fuel and other material, has been erected by us all over the country and is the most economical and efficient method known. Nothing to get out of order; has always given satisfaction.

**California Wire Works**

[LICENSEES]

Office, 330 Market St San Francisco, Cal



Mention the Journal

**EASTERN PRICES BEATEN** IMPROVED FACILITIES, FINEST WORK LOWEST PRICES**PERFORATED SHEET METALS**

For Flour and Rice Mills, Grain Separators, Shaker Screens, Gravel and Cement, Revolving and Shot Screens, Stamp Batteries, Iron, Steel, Russia Iron, American Planish, Zinc, Copper and Brass Screens for all uses. Inventor and Manufacturer of the celebrated Slot Buried and Diagonal Slot punched Screens.

**MINING SCREENS A SPECIALTY**

Mill owners using screens extensively, can contract for large supplies at favorable rates. J. W. QUICK is the only competent and successful manufacturer of Screens on the Coast, having furnished Screens to the Principal Mills of

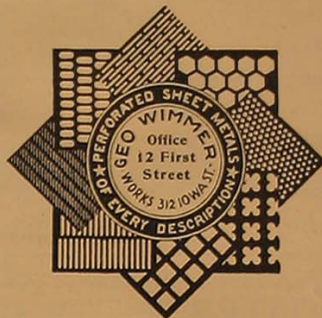
California, Nevada, Alaska, Mexico, Arizona, Central America, Australia and British Possessions.

**San Francisco Pioneer Screen Works**

(Established 1860)

221 and 223 FIRST STREET, SAN FRANCISCO.

J. W. QUICK, Prop.

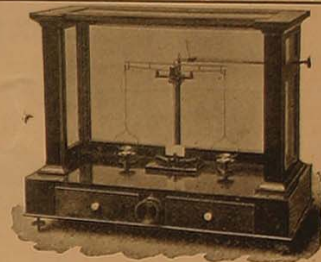


MANUFACTURER AND DEALER IN

**Perforated Sheet Metals,**

Steel, Russian Iron, American Planish Zinc, Brass and Copper.

Mining Screens of Every Description  
SAN FRANCISCO, CAL.

**AINSWORTH NO. 045**

SENSIBILITY.....1-50 MILLIGRAMME

Eight-inch beam, single rider attachment, and designed for a silver button balance to carry a heavy load.

Complete catalogue of Assayers' and Chemists' supplies, including this and other balances, mailed upon application. SELLING AGENTS,

**The Denver Fire Clay Co.,**

1742-1746 Champa St., Denver, Colo.  
P. O. BOX, 1540

**The Kootenai Gold Mining District**

of British Columbia, which of late has been attracting considerable attention, is best reached by the Oregon Railroad and Navigation Co. The fact has recently been brought out that the Kootenai district contains within its borders more *High Grade Silver and Lead Mines* than any other part of the world. The recent discoveries of *Rich Gold Lodes* makes it the most attractive country for the *Capitalist Miner and Prospector* to visit in search of mines.

**The Oregon Railroad and Navigation Co.**

Dispatch Fast Steamers every Four Days

from San Francisco connecting at Portland, Oregon with their rail line for all points in this famous district. For full particulars address,

E. C. WARD, GENERAL AGENT.

630 Market Street, SAN FRANCISCO, CAL.

**WIRE TRAMWAYS**

Ropeways,  
\* Incline Planes,  
and Railways.

Hoisting Apparatus, Patent Grip Pulleys, Transmission of Power by Wire Ropes; 25 years experience; Send for Ropeway Pamphlet.

Pacific Coast Agents for

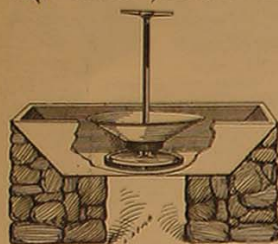
**The Calhoun Excavator**

A combined power Shovel and Cableway for excavating and handling earth or loose rock.

SEND FOR DESCRIPTIVE CIRCULARS

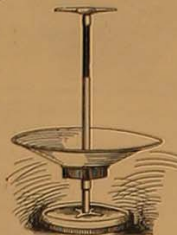
## The Little Alaska Gold Washer,

Designed and  
Manufactured by  
**T. J. BURKE, 329 E. 2d St.**  
LOS ANGELES, CAL.



Applications for Patents Pending in the United States, Canada and Mexico. Filed in the Patent Office at Washington, February 2d, 1898.  
No Screens, nor Grizzlies; handles all material from the grass roots to hard rock; A perfect miners device; Works under water or on the dry bar. Weight 7 pounds; can be taken apart and packed in a grip sack.

**W. A. RUSSELL,**  
Special Agent for the State  
of California  
441 SOUTH BROADWAY,  
LOS ANGELES, CAL.



For full particulars as to Foreign territory

**T. J. BURKE,**

329 E. 2d Street

Los Angeles, Cal.

### HOME MANUFACTURE FOWLER'S

Fossil Asbestos Manufacturing Co.,  
Sectional Removable Covering  
for Steam Boilers, Pipes, etc.  
As a Non-Conductor, Unequaled  
Absolutely Fire Proof

O. C. FOWLER, 650-58 Howard Street,  
San Francisco, Cal.



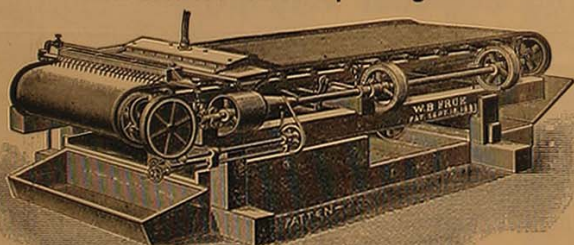
HOFF ASSBESTOS MFG. CO., Bryson Block,  
Los Angeles, Cal., Agent for Southern Cal.

## H. P. G. COATES, MINING AND DIVIDEND PAYING STOCKS,

Reliable Information on Application  
SALT LAKE CITY, UTAH

## FOUR and SIX FOOT FRUE VANNERS

With Brownell "Patent Lip" Flange Belts



After a Concentrator like the Frue Vanner has been on the market nearly two decades, and the sales have constantly increased, it is safe to say it is the "Standard Machine of the world." More Frue Vanners have been sold during the last twelve months than for the same period at any time during the history of the machine. Practical mining men in all parts of the world where mining is carried on will testify as to its merits. It is the "Standard" which all competitors are trying to imitate.

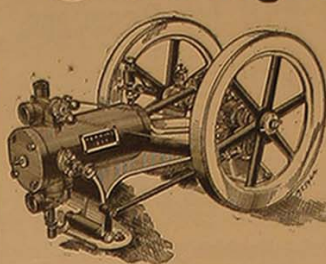
The results obtained by this machine are the "Acme" of concentration, and several cheap and untried machines that have lately come on the market compare by it, and the manufacturers will tell you that they are "just as good, and cheaper, etc." The facts are that no other concentrator made has an equal capacity, or will yield as clean a concentrate with as small loss in the tailings as the Frue Vanner. The amount saved from the lower first cost of an inferior machine counts little in the years results, when compared with the increased output from a Frue. This machine not only gives better results at both ends of the belt (i. e. Clean product and poor tailings), but is operated at less expense and requires less attention than any other machine on the market. At the Alaska Treadwell Mine where they have ordered over 350 Frue Vanners one man attends 48 machines for 12 hour shift.

**JAMES S. BROWNELL,** Western Agent  
132 Market Street.

**FRUE VANNING MACHINE CO.**

(Successor to Adams & Carter)  
SAN FRANCISCO, CAL.

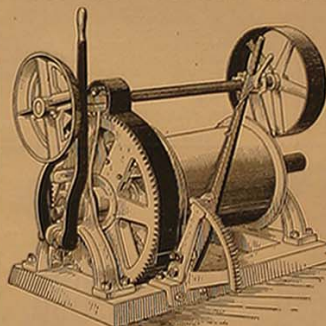
## PERKINS Gas Engine



MODEL OF 1897

Composed of Sixteen parts, constructed so plain and substantial that it may be taken to the desert mines without fear of unreliable operations, uses Storage and Dynamo for sparking, the cooling jacket water is used over. Uses about 8-10 of a gallon of gasoline for each horse power for a twelve-hour run. Ten horse power engine weighs 2250 lbs. boxed for shipment.

## Perkins Power Hoist



Is light and portable weighing 1050 lbs., heaviest piece weighs 150 lbs., capacity 1000 lbs. one hundred foot per minute, will lift 400 feet. A Safety latch follows every foot of the lift, guaranteeing absolute safety.

PRICE \$125.00

For full particulars, apply to

**Perkins Pump and Engine Co.**

1023 N. Los Angeles St., Los Angeles

## DR. W. F. DRAKE, E.M.

Mines and Mining

Reports and Examines Mines. Years of practical experience. Correspondence solicited

P. O. BOX 380

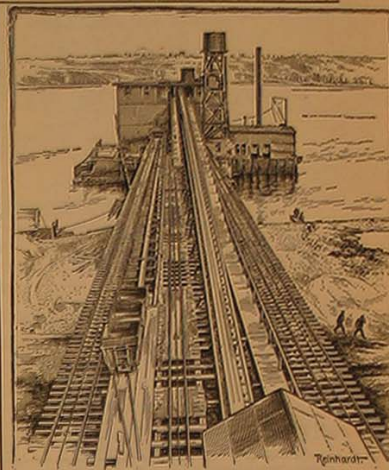
SONORA, Tuolumne County, Cal.

## SIMONDS & WAINWRIGHT,

Chemical and Mining Engineers  
and Analysts

Working tests of Ores by all Processes. Experimental Work on Chemical and Metallurgical Processes. Instructions in Assaying and Chemistry.

No. 20 Platt Street New York



FOR conveying Ore, Coal,  
Slag and Matte. Send  
full particulars of your  
wants in writing for prices.

Robins Conveying Belt Co.,

117-119 CEDAR STREET, NEW YORK

## JOHN T. REED

Assayer and  
Analytical Chemist

Assays made for all valuable minerals. Analysis made of all valuable minerals. Special attention given to the sampling of mines. Estimating the value of and testing the nature of their ores. 100 pound lots of ore sampled, and working tests made by Cyanide, Amalgamation and Chlorination Processes.

OFFICE 522 COURT STREET,

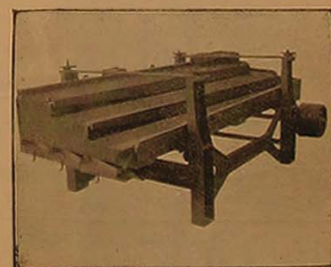
San Bernardino, California

E. E. BURLINGAME'S

## ASSAY OFFICE

Established in Colorado, 1866. Samples by mail or express will receive prompt and careful attention. Gold and Silver Bullion refined, melted and assayed, or purchased.

Address 1736 and 1738 Lawrence St., Denver, Col.



## The Bartlett Concentrating Table

Capacity 10 to 30 tons daily; size 4x8 feet; weight 800 lbs. Clean separation of all minerals without sizing. Price \$250. Send for description.

American Zinc Lead Co.,  
CANON CITY, COLO.

# Consolidated Kansas City Smelting & Refining Co.

BUYERS OF ALL CLASSES OF

## BULLION, MATTE, ORE & MILL PRODUCTS, GOLD and SILVER BARS

Smelting Works { Leadville, Colorado.  
El Paso, Texas.  
Argentine, Kansas.  
REFINERIES ARGENTINE KANSAS.

FOLLOWING CODES USED: At Argentine, Kansas,  
A. B. C.  
Moreing & Nell's  
and Bedford McNeill's.

## Ore Purchasing Agencies

{ Spokane, Wash. Salt Lake, Utah.  
Leadville, Colorado. Denver, Colorado.  
El Paso, Texas. Argentine, Kansas.  
Cripple Creek, Colorado

# THE PUEBLO Smelting and Refining Company,

PUEBLO, COLORADO.

BUYERS OF  
Gold, Silver, Lead and Copper Ores,  
Copper Matte and Bullion.

## Refiners of Gold, Silver, Lead and Copper.

Manufacturers of Bar and Pig Lead, Lead Pipe, Antimonial Lead, Copper Ingots,  
Granulated Test Leads and Litharge.

Pays Highest Prices for all classes of Ores.

Especial Attention to Sampling by most Approved Processes.

Quick Returns on all Consignments.



### CHAS. B. BOOTHE & CO.

MINING AND MILLING MACHINERY AND SUPPLIES,

Hoists, Horse Whims, Buckets, Wire Rope, Ore Cars

129 SOUTH LOS ANGELES STREET,

LOS ANGELES, CAL

### FRANK H. HOWE,

MECHANICAL ENGINEER

Boilers, Engines, Pumps, Complete Steam and Oil Burning Plants

Mill and Mining Machinery

203 North Main Street, Los Angeles, Cal.

TELEPHONE MAIN 1367

# RISDON IRON WORKS,

SAN FRANCISCO, CALIFORNIA

Cable Risdon's, Code—A. B. C. & Leibers

MANUFACTURERS OF

GOLD DREDGING MACHINERY AND COMPLETE EQUIPMENT for Placer Mines, OUR SPECIALTY.

We build Gold Dredges Complete in Running Order to handle 2,500 cubic yards per day at a cost of 3 cents per cubic yard.

We excavate 50 feet below water, 20 feet above water and handle boulders up to one ton weight. Send for Dredging Catalogues Nos. 15 and 16.

We also build all kinds of Mining, Milling Concentrating, Pumping, Air Compressing, Hydraulic, Water Wheel and Hoisting Machinery.

EVANS' HYDRAULIC GRAVEL ELEVATORS.

We publish 16 Catalogues. Write for one in the line you are interested in.



## The Mining & Metallurgical Journal



Has its Offices

STIMSON BLOCK, LOS ANGELES, CAL., and  
64-65 MERCHANTS' EXCHANGE, SAN FRANCISCO, CAL.

Write for Advertising Rates

Do you  
Want**MINING AND MILLING MACHINERY** and do you want **QUICKLY**  
to get it

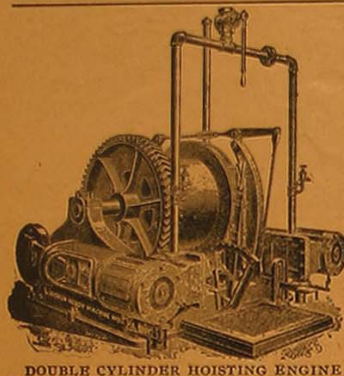
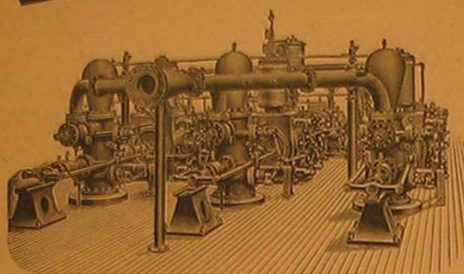
If You Do, Address

**Fraser & Chalmers, 133 FULTON STREET, CHICAGO**

whose works are exclusively devoted to and adapted for the manufacture of Mining and Ore Reducing Machinery.  
During the month of January, 1898, Fraser & Chalmers' Chicago Works received orders for Mills amounting to a total of

**Eight Hundred and Fifteen [815] Stamps**

and it is significant of their resources that even with this great amount of work in hand, they are still in position to contract for additional work for which **QUICK SHIPMENT** can be made.



DOUBLE CYLINDER HOISTING ENGINE

**JOSHUA HENDY MACHINE WORKS, Nos. 38 to 44 Fremont St. SAN FRANCISCO, CAL.**

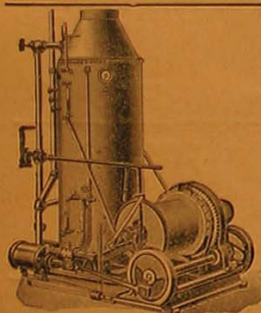
Manufacturers of and Dealers in

**The Latest Improved****Quartz Milling, Pumping, Hoisting and Smelting Plants, Air Compressors and Rock Drills.****"HENDY" IMPROVED "TRIPLE-DISCHARGE" TWO-STAMP QUARTZ MILLS Boilers, Engines & Pumps of all capacities**

PLANS, SPECIFICATIONS and ESTIMATES OF COST SUBMITTED and CONTRACTS ENTERED INTO FOR FURNISHING and ERECTING MINING and MILLING PLANTS for all conditions of Use.

**BAKER IRON WORKS****LOS ANGELES, CALIFORNIA**

Manufacturers of

**Mining and Milling Machinery, Atlas Engines and Boilers, Worthington Steam Pumps****Water Works Machinery A SPECIALTY****MINING ENGINES**  
**Double AND Single Drum**

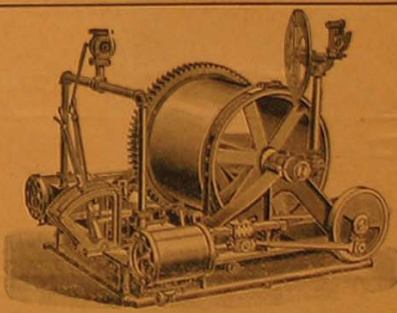
— ALSO —

Hoisting Engines and Electric Hoists for Every Known use

**LAMBERT HOISTING ENGINE CO.**

SEND FOR OUR NEW CATALOGUE R

125 POINIER STREET, NEWARK, N. J.

**Mining Timbers and Construction Lumber**

(Calcutta Long Leaf Yellow Pine Lumber)

Prices given for delivery to any point in Mexico by Rail through Porfirio Diaz, Nuevo Laredo or Paso del Norte, and by Vessel through Gulf Ports of Tampico and Vera Cruz.

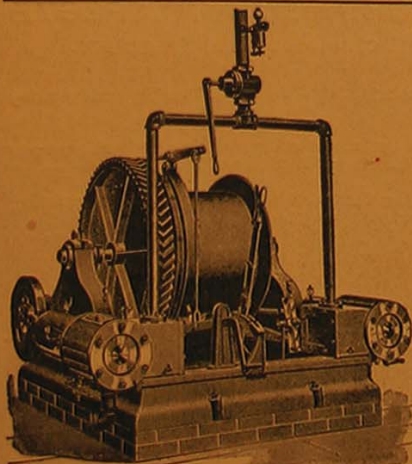
**Bradley-Ramsay Lumber Co.**

LOUISIANA, U. S. A.

ADDRESS INQUIRIES FOR PRICES TO

**R. N. WATSON, AGENT.**

APARTADO NO. 118 MONTERREY, N. L. MEXICO

**PARKE & LACY COMPANY****21 and 23 Fremont St., San Francisco, Cal.****MINING MACHINERY**

SOLE AGENTS FOR THE INGERSOLL-SERGEANT AIR COMPRESSORS AND ROCK DRILLS.

SOLE LICENSEE FOR THE MANUFACTURE AND SALE OF

THE ROPP STRAIGHT LINE FURNACE, For Roasting, Chlorinating and Desulphurizing Ores.

WE CARRY IN STOCK

Horizontal, Vertical and Portable Engines and Boilers. Rock Breakers, Cornish Rolls, Pulverizers, Concentrators, Ore Feeders. Hoisting Engines, Horse Power Hoisting Whims, Water Wheels, Steam Pumps, Ore Cars, Wire Rope, Ore Buckets, Water Buckets, Skips. Blowers and Exhaust Fans, Shafting and Pulleys, Belting, Oils and Mine Supplies. **Maganese Steel Shoes and Dies**

Estimates Furnished for Complete Plants for Hoisting Works, Smelters, Concentrating and Stamp Mills.